United States Court of Appeals for the Second Circuit



APPENDIX

United States Court of Appeals

FOR THE SECOND CIRCUIT

HELLENIC LINES LIMITED,

Plaintiff-Appellant,

-against-

LIFE INSURANCE CORPORATION OF INDIA,

Defendant-Appellee.

HELLENIC LINES LIMITED,

Plaintiff-Appellant,

-against-

AETNA CASUALTY & SURETY COMPANY, et al., Defendants-Appellees.

ON APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK

JOINT APPENDIX

(Volume 2—Pages 383a to 766a)

BURLINGHAM UNDERWOOD & LORD 25 Broadway New York, New York 10004 Attorneys for Plaintiff-Appellant

DONOVAN, DONOVAN, MALOOF & WALSH 161 William Street

New York, New York 10038

Attorneys for Defendant-Appellee Life Insurance Corporation of India in 74-1629 and Defendants-Appellees Aetna Casualty & Surety Company, American Motorists Insurance Company, Atlantic Mutual Insurance Company. Federal Insurance Company, Sea Insurance Company, Ltd., Great American Insurance Company, United States First Insurance Company, in 74-1632

HILL RIVKINS CAREY LOESBERG & O'BRIEN 96 Fulton Street New York, New York 10038 Attorneys for all other Defendants-Appellees in 74-1632



PAGINATION AS IN ORIGINAL COPY

INDEX TO JOINT APPENDIX

	PAGE
Relevant Docket Entries in 71 Civ. 2865	1a
Relevant Docket Entries in 71 Civ. 3221	4a
Complaint in 71 Civ. 2865	7a
Answer of Aetna Casualty & Surety Co.	28a
Answer of Atlantic Mutual Insurance Co.	31a
Answer of Federal Insurance Co.	34a
Answer of Sea Insurance Co., Ltd.	37a
Answer of United States Fire Insurance Co	40a
Answer of Pennsylvania Insurance Co., et al	43a
Answer, Counterclaim, etc., of American Motorists Insurance Co	49a
Answer, Counterclaim, etc., of Great American Insurance Co.	54a
Reply to Counterclaim of American Motorists Insurance Co.	59 a
Reply to Counterclaim of Great American Insurance Co	62a
Plaintiff's Proposed Findings of Fact and Conclusions of Law in 71 Civ. 2865	64a
Defendants' Proposed Findings of Fact and Conclusions of Law in 71 Civ. 2865	79a

	PAGE
Complaint in 71 Civ. 3221	93a
Answer of Life Insurance Corporation of India	99a
Plaintiff's Proposed Findings of Fact and Conclusions of Law in 71 Civ. 3221	102a
Defendants' Proposed Findings of Fact and Conclusions of Law in 71 Civ. 3221	113a
Stipulations of Fact	116a
Extracts From Trial Transcript	125a
Decision of Honorable Thomas P. Griesa, Dictated From the Bench	582a
Deposition of Charles Allan	609a
Deposition of Marcos Evangelou	734a
Stipulation of Discontinuance as to Counterclaims of Defendants American Motorists Insurance Co.	750-
and Great American Insurance Co.	759a
Judgment in 71 Civ. 2865	760a
Notice of Appeal in 71 Civ. 2865	762a
Judgment in 71 Civ. 3221	764a
Notice of Appeal in 71 Civ. 3221	765a

477a

WITNESSES

WILMERSES	
For Plaintiff	
Harry T. Petsis	
Direct	126a
Cross	184a
Redirect	200a
Marcos Evangelou	
Direct	203a
Cross	236a
Redirect	267a
Sigurd Golten	
Direct	274a
Cross	299a
Redirect	323a
William Smith	
Direct	324a
Cross	359a
William Carlson	
Direct	383a
Cross	385a
Arne Haugestad	
Direct	430a
Cross	443a
Redirect	465a
Recross	470a

Further Redirect

	PAGE
Louis George Van Cooten	
Direct	513a
Cross	546a
Redirect	570a
Recross	575a
William Carlson, Recalled	
Direct	577a
For Defendants	
Eric Swire Bates	
Direct	388a
Cross	411a
Eric Swire Bates, Recalled	
Direct	505a
Cross	512a

William Andrew Carlson-for Plaintiff-Direct

[622]

WILLIAM Andrew Carlson, called as a witness by the Plaintiff, was duly sworn and testified as follows:

Direct Examination by Mr. Kritzalis:

- Q. Mr. Carlson, by whom are you employed? A. By Fred S. James & Company of New York.
- Q. How long have you been— A. Despard International Division.
- Q. How long have you been employed by that organization? Is that one organization? A. That is one organization, that is correct.
- [623] Q. For how long have you been employed by that organization? A. I have been employed by Fred S. James since 1970. They purchased Despard in July of 1970 and I have been with Despard since September of 1961.
- Q. Prior to that purchase what was the business of Fred S. James? A. General insurance brokerage.
- Q. For how long had Fred S. James been in business?

 A. As of today, approximately one hundred years.
- Q. Prior to the purchase of Despard by Fred S. James, for how many years had Despard been in business? A. Roughly ninety years.
- Q. What was Despard's business prior to the purchase by Fred S. James? A. General and marine insurance brokers and average adjusters.

.

William Andrew Carlson-for Plaintiff-Direct

[624]

Q. Mr. Carlson, I hand you Plaintiff's Exhibit 31 marked for identification and I ask you whether you recognize it and whether your signature appears anywhere on that document.

The Court: Isn't that the subject of stipulation Item 19?

Mr. Kritzalis: If I may, your Honor, I have a couple of questions of this witness and I would like to [625] qualify him before I ask him the questions.

The Court: What? What?

Mr. Kritzalis: I want to ask him whether there is anything in that document marked Plaintiff's Exhibit 31 for identification which in any way apportions the cost of permanent repairs to the Hellenic Sailor to cargo underwriters.

The Court: All right.

Q. In accordance with what provision of the plaintiff's bill of lading was that statement of general and particular average made? A. The bill of lading contains a general average clause, [626] and if I may read on page 6 of the—

Q. Is that a clause commonly known as the New Jason Clause? A. No, the New Jason Clause is the negligence clause.

Q. What is the other clause? A. The contractual clause whereby cargo agrees to respond to general average, or

William Andrew Carlson-for Plaintiff-Cross

agrees to a statement of general average according to York-Antwerp Rules, 1960,* except Rule 22 thereof.

[627]

- Q. Is it fair to say that Plaintiff's Exhibit 31 is a document which separately apportions the costs of general average and separately apportions the cost of particular average? A. That is a correct statement.
- Q. And the cost of particular average would be those apportioned between the vessel and the vessel's hull underwriters? A. Yes.
- Q. And the cost of general average would be the cost apportioned between the vessel and cargo underwriters?

 A. And freight, where freight is at risk.
- [628] Q. Was any freight at risk in this venture, to your knowledge? A. There was no freight at risk.
- Q. Is there anything in that statement of general and particular average which apportions to cargo underwriters the costs of permanent repair to the vessel, Hellenic Sailor, as a result of the general average casualty at issue in this case? A. Not to my knowledge.

Cross Examination by Mr. Kennedy:

Q. Mr. Carlson, if during the course of a general average a feasible temporary repair is abandoned after it is partially completed and the owner decides to make per-

Should be "1950" not "1960."

William Andrew Carlson-for Plaintiff-Cross

manent repairs, assume also that the permanent repairs for one reason, or any reason, one reason or another, are not [629] completed, would cargo be required to contribute in general average after the abandonment of the temporary repair?

Mr. Kritzalis: If I may, your Honor.

Q. Is a-

Mr. Kritzalis: May I note my objection? I don't know specifically whether this is a hypothetical or whether Mr. Kennedy is addressing himself to the facts of this case. And I don't think I have asked the witness anything with respect to—the witness'—

The Court: On its face it is a hypothetical.

Mr. Kennedy: Yes, it is, your Honor.

The Court: All right. Now, that's that. It is a hypothetical. Do you have any objection?

Mr. Kritzalis: As a hypothetical, no, your Honor. The Court: All right.

A. Would you rephrase that question?

Q. If the owner in a general average situation begins feasible temporary repairs, that is, repairs that can be completed so as to allow the vessel to continue its voyage and complete its voyage, if in that situation he abandons the temporary repairs and he begins permanent repairs, is the time spent for the permanent repairs chargeable to the cargo interests in general average? A. Well, there are an awful lot of variables in that [630] question that you've got there.

William Andrew Carlson-for Plaintiff-Cross

- Q. Well, are you having difficulty with the question? A. Yes, because I—
- Q. Do you understand what I mean when I refer to feasible temporary repairs? Yes, I do.
- Q. Do you understand what I mean when I refer to permanent repairs? A. Yes, I do.
- Q. When the owner goes from feasible temporary repairs to permanent repairs, what happens, if anything, in the G.A. situation? A. Well, that would be an owner's option, and quite frankly I have never—I can't envision an owner—you say feasible temporary repairs, I would think an owner would carry on with the temporary repairs.
- Q. He should carry on if it is feasible. Is that what you are saying? A. I mean I don't know, there has to be another element introduced here as to why he changed.
 - Q. Well, ignore the other element.

Mr. Kritzalis: Isn't that the witness' answer, your Honor? And I would rather not have this witness badgered by Mr. Kennedy on cross-examination.

[631] The Court: I don't think there is any badgering. Do you have an objection?

Mr. Kritzalis: Yes, I have an objection.

The Court: All right. Overruled.

A. In the absence of any reasonable explanation for why the owner abandoned the temporary repairs and proceeded with permanent repairs, I would have to say that the initial undertaking of temporary repairs would be left in doubt.

The Court: I couldn't hear.

The Witness: It would be left in doubt. Why did he do it? I mean, why did he start temporary repairs when he could have done permanent repairs?

Q. Let's assume that he did do it. I am asking you if once he abandons the feasible temporary repairs—

The Court: I think we will have to recess.

Aren't these questions of law that I am going to have to decide?

Mr. Kritzalis: Yes, sir.

[634]

The Court: As I understand the posture of the case, Mr. Kritzalis has one more witness on his direct case and that is Mr. Allen.

Mr. Kritzalis: Yes, sir.

The Court: Who will hopefully be here Monday. All right, why don't you go ahead, Mr. Kennedy.

ERIC SWIRE BATES, called as a witness by Defendant, was duly sworn and testified as follows:

Direct Examination by Mr. Kennedy:

Q. Mr. Bates, by whom are you employed? A. Ganly Briggs.

The Court: What is that name?

The Witness: Ganly Briggs. G-a-n-l-y B-r-i-g-g-s. [635] England.

- Q. What kind or kinds of work is your employer engaged in? A. We are marine surveyors and consulting engineers.
- Q. What type of work do you specifically do for your employer? A. Very largely on consulting work with diesels and steam turbines, but these days mainly diesels.
- Q. Mr. Bates, have you had any formal education? A. Yes, I have.
- Q. Would you describe briefly for us the extent of your formal education? A. The engineering education, you refer to?
- Q. Yes, if you wish to limit it to engineering education. A. Well, I am a chartered engineer, which is a fully qualified professional engineer, and I obtained that by going to engineering college between 1932 and 1935 in England with the firm of John I. Thornicroft, Shipbuilders, who at that time ran an engineering college, and also arranged what is called a sandwich course for their students so that some parts of the week you were in college with your masters getting the technical side, and other days of the week you were working your way through the shops getting practical [636] experience. And this was for the specific purpose of passing professional examinations as at that time set by the Institution of Mechanical Engineers, London, which required that you should pass three parts, Parts A, B, and C over a period of time, but that also in order to obtain the highest qualifications, you had to put in years of experience. So that although I passed my written examinations in my early twenties, I was not recognized by the institution until I was well into my forties before I was accorded the top grade which is called, now called, a Fellow of the Institution of Mechanical Engineers.

Since World War II the privy council, which is the top council in the government, has recognized the professional status of engineers, and I am a chartered engineer, which means that I can use this title anywhere that is recognized, where English engineers are recognized.

I am particularly a mechanical engineer as distinguished from a civil engineer or an electrical engineer.

- Q. Did there come a time when you completed your studies or your services at John I. Thornicroft & Co., Ltd.? A. That was in 1935.
- Q. What did you do after leaving that company? A. I obtained employment with Harland & Wolff, Shipbuilders, in Belfast. In the engine technical design [637] office where I was-I specialized on crankshaft design, and that in the necessary context of a ship included working on tail shafts and propellers from the point of view of the correct outcome in the design for any particular vessel which was being built by the yard at that time. So that each job number was rather, as we heard this morning in testimony, we take a hull number and you are assigning to it engine shafting propellers. All the calculations have to be done to insure that the various parts will not be overstressed. This is your responsibility, but it is then carried through. When your technical design office you then have access to the engine erection shops where you must necessarily be at the time of the erections of the engines in order to acquire data abe .. them so that you will have a continuous feedback of information to your own company and your design office.

[638] Q. Mr. Bates, did you during the time of your employment with Harland & Wolff have occasion to design crankshafts? A. Yes.

Q. Would you tell us the types of engines that you were involved with at Harland & Wolff? A. Well, they had a fairly wide range, but specific to this case we designed opposed piston two-stroke single-acting diesel engines. We also designed double-acting engines, we also designed four-stroke single engines.

Q. Are the Harland & Wolff engines similar in design to the Sun Doxford engines? A. In a basic principle, yes. But with important differences of detail.

Q. What are these important differences of detail? A. In the Doxford design of engine, the opposed pistons are carried on side cranks and in the Harland & Wolff, Burmeister & Wain licensed engine the opposed piston side cranks are operating on the side webs rather than on the side pins. This gives you a stiffer crankshaft than that obtained by the Doxford engine.

Q. For how long did you remain with Harland & Wolff, Shipbuilders? A. Until 1940.

Q. What did you do at the time you left that company? [639] A. Because of my experience I went straight into the Royal Navy as a serving officer and not as a volunteer officer, and I had a variety of duties to do with motor torpedo boats at the beginning, but my most important job at the later end of the war I was chief repair officer in the Mediterranean based on Malta for coastal forces, which including landing craft, harbor craft, and that was the repair of these engines and their hulls, due to war damage.

Then I was recalled and sent to the Admiralty engineering laboratory at West Drayton where I was in charge of diesel engine development.

Q. Did there come a time when you left the British Navy?
A. Yes.

Q. When was that, and for what purpose? A. 1946.

Q. What type of work did you do after you left the British Navy? A. I joined the Anglo-Iranian Oil Company and went into their engine research department, and the Anglo-Iranian Oil Company is now known as British Petroleum. And from their engine research department I went into a newly formed branch called technical services branch.

Do you want me to carry on? [640] Q. No.

What kinds of engines did you come into contact with during the course of your work with British Petroleum? Were they gas turbines, steam engines, or what kinds? All kinds? A. Well, eventually, because one does make progress and I became a manager, I covered all that field. But when I started, I started with marine diesels, and then I had a staff and then I went up through the—and I had various sections so that we were dealing with diesel engines of all kinds, ships, locomotives, road transport, gas turbines, gasoline engines, aviation engines. All engines, in effect.

Q. How many years did you spend at the company which ultimately was called the British Petroleum Company? A. I had left them in 1971.

Q. What did you do in 1971? A. I joined Ganly-Briggs.

The Court: And what did you do—I'm not clear exactly—what did you do with respect to engines when you were with Iranian?

The Witness: Yes, your Honor.

The purpose of this—with Anglo-Iranian in the research laboratory?

The Court: Yes.

[641] The Witness: We had full-sized engines. We had a range of engines from medium-speed marine diesel, and we had one very large single-cylinder experimental engine called a National. It no longer exists. But this was a two-cycle single-acting diesel engine with about a 20-inch piston. And the purpose of all this work was in the research laboratories as distinguished from technical services.

The Court: To help in oil-

The Witness: To get the right qualities of fuel and lubricant. And in technical services one kept in contact with builders such as Doxford, Harland & Wolff, and all the big engineering names in order to maintain their approval of your product, and to be ready for new developments coming from these firms so that, say, three to four years before a new design was actually put into a ship, or put on the market, shall we say, you had been working in close relationship with the manufacturer through his design department to insure that the product that you had to offer his customer and your customer would be satisfactory. And to this extent I had a budget, a personal budget for purchasing a hundred thousand pounds sterling per annum, which I spent in that way.

[642]

Q. Mr. Bates, during the course of your work, have you from time to time had occasion to see fractured crankshafts, or, fractured pieces of steel in crankshafts and the like coming from ships and other structures? A. Yes, I have seen broken crankshafts.

- Q. Have you from time to time seen photographs of broken crankshaft sections? A. Very many indeed. I have studied those as a matter of interest in part of my job.
- Q. Are there different types or kinds of fractures which one might find in a crankshaft that is fractured? A. Yes, there are three main types of fracture.
- Q. Would you tell us the three types, please? A. I will take them in my own order.
- Q. All right. A. Torsional, torsional with bending, and pure bending.
 - Q. What would cause a torsional fracture?

[643]

- A. Two main possibilities. One is complete failure due to twisting, implying that on the one hand the shaft has not got the strength designed into it for the actual twisting load applied, but far more likely that the shaft has been directly designed and the torsional failure is due to torsional vibration.
- Q. What is a bending fracture? A. A bending fracture is wholly due to a bending stress in excess of that design as permissible by the crankshaft designer, allowance permissible.
- Q. The third, torsional bending, would you tell us what that is? A. That is virtually a combination of the two. It is where, for example, in a crank pin where you do find both bending stress and torsion together. You would not find that in a crank web for example where you have only bending.

^{*} Should be "correctly" not "directly."

Q. I show you a photograph, Defendant's Exhibit B, and I ask you if you can give an opinion as to the type of fracture that is evidenced in this photograph (handing). A. Well, this crank web failure is due to an excessive bending moment, which has resulted in an excessive bending stress.

[644] Q. You said that the fracture was due to a bending moment. Will you go into that for us? Describe what a bending moment is. Particularly with respect to the operation of a crankshaft. A. A moment is the multiple of a force through a distance. And using this design the forces are downwards (indicating), up and down—

Q. Referring to the force that one would expect from the— A. From the explosion—

Q.—the explosion in the No. 2 cylinder. A. That's right. The development of horsepower. The forces are downwards on the pin and the moment is the distance across from here, the support is there at that main journal bearing, and in this particular—the way this is drawn, the only way I can describe it is to say that it is a bending moment like that (indicating), through there. And that means that that side web and the main crank web are under bending stress.

Mr. Kennedy: Your Honor, I have a hypothetical—

The Court: Just a minute, Mr. Kennedy.

A. I would like to say there are additional forces involved.

The Court: All right.

[645] Mr. Kennedy: Your Honor, I have a question which has to be in a hypothetical form considering that the plaintiff has yet to close and the testimony has yet to offer any evidence. So while we expect to have the information, or the important facts that are in the hypothetical in evidence, I must put it in a hypothetical form at this time.

The Court: How long is that?

Mr. Kennedy: It is about two pages. It consists of a series of readings.

The Court: It is one way to approach it, I guess.

[646] Q. Mr. Bates, assume that a Doxford engine ship, that is, a ship having a Doxford engine amidships is owned by an owner who was told by the company that manufactured the engine that the recommended web deflections for the Doxford engine's main cranks are as follows:

In the first instance with the new bearings and flow connecting rods installed on the shaft from five thousandths to six thousandths of an inch deflection on the bottom of the main crank;

That with new bearings and no connecting rods installed on the shaft recommended deflection is ten thousandths of an inch to twelve thousandths of an inch at the bottom of the main crank—in the second instance with new bearings and connecting rods installed.

In the third instance, with worn bearings and connecting rods installed on the shaft the recommended deflection at the bottom of the crank is twenty thousandths to twenty-two thousandths of an inch.

^{*} Should be "all" not "flow".

Assume also that during the month of September 1962 the same shipowner employs the services of a company to make repairs, specifically to its main engine crankshaft and to the main engine bearing.

[647] Assume also that after the repairs and after the adjustments a report is prepared by the same company showing the average alignment readings by use of a telescope taken along the crankshaft; at the No. 4 bearing the shaft is lying in a hog of twelve thousandths of an inch; at the No. 3 main bearing the shaft is lying in a hog of eleven thousandths of an inch; at the No. 2 main bearing the shaft is lying in a hog of six thousandths of an inch.

Assume also at the same time that the vessel draft is 24 feet forward and 26 feet aft.

Assume also that the vessel's maximum draft is 29 feet, maximum mean draft is 29 feet.

Upon completion of the repairs deflections of the main engine crank webs at the bottom of the web top of the stroke are taken and the readings are found as follows:

Sixty-four hundredths of a millimeter, or twenty-five thousandths of an inch—I will give you these in inches—25 thousandths of an inch at crank No. 1, 9 thousandths of an inch at crank No. 3 and 16 thousandths of an inch at crank No. 4.

Assume further that on November 20th the following year, that is in 1963, with the vessel having the following [648] drafts; 27 feet, 3 inches forward; 27 feet, 7 inches aft, the rankshaft has an alignment as reflected in a wire gauge reading as follows:

A hog of 3 thousandths of an inch at No. 4, a sag of 7 thousandths of an inch at No. 3 and a hog of 2 thousandths of an inch at No. 2.

Assume further that on September 9th the following year, that is in 1964, the shipowner again has a wire gauge reading taken of its ship.

At the time the ship has a draft of 16 feet, 3 inches forward, and 19 feet, 3 inches aft.

At that time alignment readings are taken with a wire and they are as follows:

12 thousandths of an inch sag at No. 4, 8 thousandths of an inch sag at No. 3, 8 thousandths of an inch sag at No. 2.

Assume further that no alignment readings are taken between September 8, 1964 until February 1st, 1966.

At that time with its vessel having a draft of 10 feet, 10 inches forward and 22 feet, 8 inches aft, a wire gauge reading shows the following results:

24 thousandths of an inch sag at No. 4, 38 thousandths of an inch sag at No. 3, 17 thousandths of an inch sag at No. 2.

[649] Assume further that later this same year on August 2nd, 1966, and the vessel having a draft of 14 feet, 3 inches forward and 25 feet, zero inches aft, the same shipowner has a wire gauge alignment reading prepared and it shows that at No. 4 bearing the crankshaft has a sag of 14 thousandths of an inch, at No. 3 it has a sag of 16 thousandths of an inch, and at No. 2 it has a sag of 11 thousandths of an inch.

Assume further that no other alignment readings are taken until October 11, 1967 with the ship having a forward draft of 12 feet, 6 inches forward and an aft draft of 22 feet, 10 inches aft.

The wire gauge reading shows that at No. 4 main bearing there is a sag of 32 thousandths of an inch, at No. 3 main

bearing a sag of 42 thousandths of an inch and at No. 2 main bearing a sag of 32 thousandths of an inch.

Assume also that at no time since September 1962 has the shipowner taken web deflection readings of the vessel's main crank webs.

Assume finally that no other alignment readings are taken after October 11, 1967, and that at New Orleans on October 31, 1967, the vessel sets sail for a voyage which after receiving additional cargo at United States ports [650] would terminate at cities in the Far East.

Assuming all this, do you have an opinion as to whether before and upon the vessel's departure from New Orleans the shipowner did what he could prudently or reasonably do to make the ship seaworthy in respect of the vessel's main engine crankshaft? A. Yes, I have an opinion.

The Court: Do you have a copy of the question?

Could I have the question?

Mr. Kennedy: Would you like to read it?

The Court: Yes.

A. My answer is yes, I have an opinion.

It would have been prudent to have taken crank web deflections at the same time.

- Q. At what time? A. At the time you gave me.
- Q. At the time— A. You said the 11th of October 1967.
- Q. And why would it be prudent to take crank web deflection readings? A. Because when you have these figures laid out in the way that you have introduced them, you can see immediately that there is a continually increasing sag from 1962 to 1967.

.

[652]

The Court: All right.

Well, I have his question now. I just want to know what is the reading that you are talking about as the 1963 reading.

The Witness: He gave me the deflection readings on 4, 3 and 1 bearings plus 3000 minus—

The Court: That's November 20, 1963.

A. That's not an excessive dogleg as it was described earlier, or discontinuity as I would describe it. It has a curve.

You have for comparison the year 1962 which was also a free loaded ship where you had a homogeneous smooth curve. The—

The Court: Let me see if I have that. This is what date?

The Witness: Well, I only just jotted down notes. I have got it as a 1962, the first one he read out.

Mr. Kennedy: That would be September of 1962 completion of the repairs.

The Court: And that would be when?

Mr. Kennedy: September of 1962.

[653] The Witness: And I have got for 4, 3 and 2, I have got a hog plus 12 thous, plus 11 thous plus 6 thou, and with a mean draft of 25 feet. And in 1963 you have got almost the same mean draft, slightly higher loading, but you don't have so much hog.

In addition you have a slight doglet* in that curve. The Court: Now let's see, this September 1962 is hog, is that right?

The Witness: Right.

The Court: And 1963 is sag?

The Witness: No, it is a partial hog, partial sag. No. 3 bearing has come into a sag position, very slightly.

The Court: November 11, so it is hog, sag and hog. All right, I have got it.

The Witness: From there on, your Honor, all the readings are in a sag position and the general trend is for the sag to increase with time.

Mr. Kennedy has read out the corresponding drafts so you will see that they are all in a sense light ship drafts, and there are variations from year to year, but the general trend is very steadily an increasing sag.

[654] And if you then compare September 1962 and the 11th of October 1967 directly, and if you take the middle of the engine which is No. 3 main bearing, journal bearing, the total change is from plus 11 to minus 42 which is a total of 53 thousandths of an inch, which is a very considerable change in the crankshaft deflection.

And on account of that, seeing that there are crank web deflections relative to the first set of readings in September of 1962, the prudent thing to do is to take

^{*} Should be "dogleg" not "doglet".

another set of crank web deflections in 1967 to see how they compare specifically to insure that none of the crank web deflection readings exceed the figure recommended by Sun Doxford of 20 thousandths of an inch.

[655]

The Witness: Well, he gave me these figures and as I have just said there were a set of figures related to 1962, there would be no figures in between. That was stressed to me in the hypothetical and therefore in 1967 when I have seen this very large increase in sag continually occurring regardless of the fact that we have changing drafts, I would have said that it was essential to take another set of crank web deflection readings to insure that no single crank, or cylinder was stressed beyond [656] the recommended figure given by Sun Doxford of 20 to 22 thousandths of an inch.

You will realize that in 1962 cylinder No. 1 is already showing 25 thousandths of an inch.

The crank web deflection is a direct reading of the bending stress in the main crank web and in the side web and is not by inference from either the thickness of the metal in the main journals or by inference from the misalignment of the crankshaft.

It is specifically pertinent to the additional stresses in the side web.

Q. Mr. Bates, is there any relationship to crank web flex and crankshaft stress? A. The crankshaft is the whole

thing. You have asked me a question I can't answer. I mean you phrased it in such a way that I am afraid I can't give you a sensible answer.

Q. You said that a prudent shipowner should have taken web deflection readings? A. Yes.

Q. What would the web deflection readings tell him? [657] A. It would tell him of the stress in the main crank web and in the side web.

Q. Why would he be interested in knowing what the stress* stress in the main crank web and the main side web is? A. So that it should not exceed the manufacturer's recommended figure.

Q. If it exceeds the manufacturer's recommended figure what is likely to happen? A. Then he is putting an excess, excess stress into the side web which will eventually cause failure in time.

Q. Where? A. In the web.

Q. Which web? A. The side web is more likely to fail than the main web, because the bending moment is greater there.

Q. Referring to Plaintiff's Exhibit 1-A in evidence, specifically position No. 2, that is where the No. 2 cylinder main crank is—assume that there was an excess of deflection in the main webs at crank No. 2.

Do you have an opinion as to whether this excess deflection might account for a fracture in the after side web of the No. 3 main journal? A. Yes.

[658] Q. Would you tell us why that could be? A. Because the position of the side web is the position of the

^{*} Thus in the original.

maximum bending moment. This is of a lesser bending moment than that (indicating).

- Q. Where does the stress come from, or what brings in the bending moment? A. There are two main directions. First are the allowed bending moments due to the working of the engine. And the weight of the shaft itself. And then there is the additional stress due to misalignment of the crankshaft.
- Q. Mr. Bates, I show you the third page of a document in evidence, Defendant's Exhibit K, and I ask you if you can tell us the position in which the crank shown in that diagram is lying (handing)? A. The main crank pin is at the top dead center and the side crank pins are at bottom dead center.
- Q. What does that tell you? Where is the bottom of the crank? A. Which crank?
 - Q. The main crank. A. Do you mean the-
- Q. The main—referring to the drawing, what I am interested in finding out is which is up and which is down in this drawing? With respect to the crank.

[659]

The Court: What I don't understand, I think you have covered it in the last few moments, but I don't understand—you are talking about—the big webs you are talking about, center webs, is that right?

The Witness: Yes, sir.

The Court: You measured the web deflection between the center webs, is that right?

The Witness: That is correct.

The Court: Let's suppose you find out that the webs have excessive deflection. All right?

The Witness: You measure them.

The Court: All right. Assume you find excessive deflection. Now, that is going to be produced, is it not, by misalignment of the crankshaft?

The Witness: Not only misalignment. It has its own weight. It has a certain amount of flexor there on account of its own weight. Like any beam, a beam, unless it is infinitely rigid, will always bend in its center. I mean it is minute, of course, but it is measurable.

The Court: Well, what could cause then excess [660] web deflection?

The Witness: Misalignment of the main bearings.

The Court: What else?

The Witness: Uneven wear-down of the main bearings.

The Court: What else?

The Witness: Uneven tightening down of the holding-down bolts. And loose chocks. They sort of go together.

[663]

The Court: Now, if we were trying to see the web deflection when the stroke is in the down position, that is as in the upper left of Exhibit Z.

Well, where do you measure? You measure it at different points in the turn, don't you?

The Witness: You measure it in exactly the same place but in three different positions of the crank.

It is always measured across here just inside so that your gauge will read across there.

[664]

The Court: Well, what I am trying to get at is the idea of what happens as far as the stress.

The Witness: Yes. The stress is-

The Court: Let's just go back and take it very slowly.

We have got this sag as shown in the October 11th readings. Now where would the—when we start out at the upper left figure in Exhibit Z where there is—the stroke is in the down position, now you have taken a reading at the top.

The Witness: Yes.

The Court: What kind of a reading might that be? The Witness: It will be on the order of like we have here, there was an example of 25 thousandths of an inch.

The Court: The reading isn't going to be 25 thousandths.

[665] The Witness: Oh, it will be 24 inches—in this case it will be 24, something something of an inch.

The Court: Let's just say it is 24.

The Witness: All right.

The Court: Now we turn it around-

Mr. Kennedy: May I interrupt, your Honor? I think I can be helpful.

What you do is the same thing you do in taking up an alignment. You set up a theoretical zero at

this point and just rotate it round and get your different readings.

The Court: All right. Zero is at the top.

The Witness: Yes, but you are right, it always has the factor of 24 inches in it.

The Court: All right. Then you move it into the next position and take another reading.

Will that be greater or less, as we are going around—

The Witness: It will be, shall we just say for the sake of argument it will be 24 plus 7 thou.

The Court: It is going to be greater? The Witness: Yes, it will be greater.

The Court: Then we come to the top position and is that the greatest?

[666] The Witness: Yes. And now let's say it will be 24 plus 15 or 18 thou. I am just giving figures.

The Court: Yes. So these big webs, at least at this point opposite from the pin, they are kind of moving in and out, is that right?

The Witness: Yes. They are flexing out of that dead straight line, that's a true right angle of 90 degrees, perfect.

Mr. Kennedy: Referring to the-

The Witness: That's the pin and the main-

Mr. Kennedy: The No. 2 pin.

The Witness: And if that distance across there increases, what in effect is happening is that this is tending to bend outwards from the straight line by some thousandths of an inch. It is bending over this way. But in the opposite sense to that (indicating). This is the correct one.

The Court: Now, the sag, I guess tends to—it would inevitably tend to contract—in other words, if the thing is hanging down, the webs would be pushed inwards towards each other.

The Witness: At the top.

The Court: At the top. And then as they turn down they would inevitably be pulled out, away from each [667] other.

The Witness: Right. The Court: All right.

Now what is the effect on the connecting rod web or whatever we call that where the fracture—

Mr. Kennedy: The side web. This one.

The Court: What is the name of that?

Mr. Kennedy: Side web. After side web.

The Court: The effect on the after side web as you have this motion.

The Witness: That tends to bend it over, too, because they are all interconnected. It is much easier to do it the right way up, that thing is misleading.

The Court: You are looking now at Exhibit what?

Mr. Kennedy: Page 3 of Exhibit K.

The Witness: As we just said as we came round into this position we assumed that the—

Mr. Kennedy: Meaning the down position. The web in the down position.

The Witness: The web's in the down position— The Court: The piston is up, the stroke is up.

The Witness: Yes. And this would give a maximum deflection like that.

Now we superimpose upon this the sag in the [668] crankshaft that we were talking about so that everything is down, that will increase this deflection.

The Court: All right.

Now what that does—

The Witness: And that is transmitted directly across—

The Court: Through the pin?

The Witness: Through the pin and then that way, sideways.

The Court: Then what you are doing is bending the side web— I am going back to Exhibit 1-A, you would be, where the stroke is down you would be bending the side web towards the piston, would you not?

The Witness: Yes.

The Court: And the top of it would be bent towards the piston and the bottom would be held by the bearing because it is a single forging, is that right?

The Witness: Right.

The Court: Then when you get down—you get to the top of the stroke and the big parts of the webs are down, those big webs would pull the after side web forward and away from the bearing, is that right?

The Witness: Right. So it is flexing, as it rotates. But the effect is a plus and minus stress.

[669] The Court: All right.

.

[672]

The Court: All right.

Now the point is that that Exhibit 1-A which we have been using has the proportions wrong. Now where did they get 1-A?

Mr. Kritzalis: They got 1-A, your Honor, from Exhibit No. 2 and I Aon't frankly see how the proportions are wrong.

The Witness: Well, it is an incorrect drawing anyway. There is no such engine ever built like that.

Mr. Kennedy: Mr. Bates-

Mr. Kritzalis: If it will make things simpler we can keep referring to Plaintiff's Exhibit No. 2 rather than 1-A so as not to confuse the witness.

The Court: I don't think there is a big problem. I just wanted to understand. I have been using the Exhibit 1-A, we all have, but we will just understand then that the—

Mr. Kennedy: Well, if you were to look at any [673] one of these—

The Court: Wait. We are focusing on this point you just made—

Mr. Kennedy: Your Honor, as I understand it, each one of these is really the same drawing, one drawing was made, photographed four times, then put together.

Mr. Kritzalis: That's accurate.

Mr. Kennedy: If that is correct, then we can look at any one of these, look at the proportion in any one of these and relate it to the schematic to see whether it is accurate.

The Court: Just give me a second to look at it.

Now on that Exhibit 1-A, how much of the connecting rod pin is opposite to part of the journal?

The Witness: Well, more than 25%, maybe a third.

The Court: All right.

Now on Exhibit No. 2, how much of the pin is opposite to some part of the—

The Witness: Oh, definitely less than 25%.

The Court: All right, I think we get the point. That's all right.

[674] Cross Examination by Mr. Kritzalis:

- Q. Mr. Bates, have you had any seagoing experience? A. Yes, in the Navy.
- Q. Apart from the Navy, in the Merchant Marine? A. No.
- Q. Are your qualifications recognized in the United States, engineering qualifications? A. I guess so. They don't have to be.
 - Q. Well, do you know? A. Recognized by whom?
- Q. Are you a qualified mechanical engineer in the United States? A. I don't think that's a question, is it?

Yes, I feel qualified.

Q. Well, the reason I asked the question is that earlier when you were stating your qualifications, you stated that you became a Fellow of the Institute of Mechanical Engineers. In other words, a chartered engineer, is that correct? A. Yes.

- Q. And that that title could be used anywhere where English titles were recognized and that's why I am asking the question whether English titles are recognized here. [675] A. They are transmutable.
 - Q. Transmutable? A. Yes.
- Q. It is not like the practice of medicine or the practice of law? A. No.
- Q. I believe you testified that you had some experience working for Harland & Wolff, is that correct? A. Yes.
- Q. That was in the design of main engine crankshaft?
- Q. During the course of your work—are Harland & Wolff shipbuilders or engine builders? A. Both.
 - Q. Both. A. They are the same thing.
- Q. And your experience was in the engine building end of it? A. And the shipbuilding.
 - Q. And the shipbuilding end of it.

During the course of your work for Harland & Wolff, did you have occasion to design bearings? A. Bearings?

- Q. Bearings. Main engine bearings. [676] A. Yes.
- Q. What kinds of main engine bearings? A. Specific to this type of engine? Babbitt.
 - Q. Babbitt? A. Yes.
 - Q. How about— A. White metal.
 - Q. Just the white metal of it? A. Yes.
- Q. How about the design of the bearings themselves? Did you have anything to do with design of bearings? A. I am talking of the whole bearing.
- Q. You are talking of the whole bearing? A. Yes, lined with Babbitt.
 - Q. Lined with Babbitt? A. Yes.

- Q. Is Babbitt what is commonly referred to as white metal? A. Yes.
- Q. Apart from the white metal, isn't there more to a a bearing, a main engine bearing? A. Yes.
- Q. What is the rest of it? A. Well, it is either bronze or steel.
- [677] Q. Did you have anything to do with the design of that part of the bearings? A. Yes, the whole bearing.
- Q. So you would include Babbitt and the whole bearing?
 A. Yes.
- Q. During the course of your design of bearings did you ever have occasion to design spherical bearings? A. No, because we decided not to use—
- Q. I just want a yes or no answer, Mr. Bates. A. Well, I will take that answer back.

In the technical design office we did design spherical bearings but we didn't use them.

- Q. Were those for marine diesel engines? A. Yes.
- Q. Of what size? A. Of similar size to this, 750 millimeter bore. It is the nearest that we built at Harland & Wolff.
- Q. How big is a 32 inch boring in millimeters? A. About 825.
- Q. I believe you testified that the engine designed by Harland & Wolff was a Burmeister & Wain double opposing— A. The same way that Sun modified the Doxford license Harland & Wolff modified the Burmeister & Wain license.

^{*} Should be "bore" not "boring."

[678] Q. Is the Burmeister & Wain the same kind of an engine? Are we talking about the same— A. In detail, yes, but in principle, no.

Q. And would one of the details be the configuration of the main engine bearings? A. Well, not so much the bearings—oh, I see, because of the sphericals you are talking of.

Q. Yes. A. Yes.

The Court: In other words, your engines did not have spherical bearings?

The Witness: No, we did not.

The Court: All right.

Q. You testified that during the course of your work with Harland & Wolff, you had experience with William Doxford & Sons, is that correct? A. I never said that.

Q. I'm sorry. Did you have any experience during the course of your service with Harland & Wolff with the firm known as William Doxford & Sons in Sunderland? A. Only to the extent that one is always checking on what your competitors are doing and analyzing their designs.

Q. During the course of your experience as a marine [679] engineer did you ever have contact with the Sun Shipbuilding & Drydock Company in Chester, Pennsylvania, with respect to design of main engines? A. No.

Q. Are you familiar with the William Doxford & Sons design of main engine crankshafts? A. Yes, I am.

Q. Are you very familiar with it? A. As familiar as you can be without actually being in the design office.

Q. Do you know whether or not William Doxford & Sons in constructing their main engine crankshafts deliberately

built into those crankshafts a sag? A. No one ever deliberately builds a sag into a crankshaft. You can't help it.

- Q. You can't help a sag, is that correct? A. No.
- Q. A sag is present in any main engine crankshaft? A. Well, you must be specific. We are talking of one cylinder and another cylinder. I am not talking of the whole crankshaft.
- Q. What about the whole crankshaft, assuming a fourcylinder engine with four sections of crank. A. Now, as you heard from Mr. Smith, you set the [680] crankshaft up so that it is supported in a straight line and the sag is on the individual cylinders in between the bearings which are in a straight line.

[690]

Q. Did there come a time, Mr. Bates, when to your knowledge William Doxford & Sons preferred the web deflection method over the wire alignment? A. Yes.

Q. When was that? A. Some time in the mid-60's.

The Court: Now, what was the question?
(Record read.)

The Court: All right.

[691] Mr. Kritzalis: Would you mark this for identification, please.

(Plaintiff's Exhibit 33 marked for identification.)

Q. Have you ever seen a publication from William Doxford & Sons to that effect? A. Yes. The one I have. The one I told you about.

Q. Fine. Is Plaintiff's Exhibit No. 33 for identification that publication you told me about? (Handing.) A. It certainly is very similar in wording.

The Court: What is the exhibit number?

Mr. Kritzalis: Plaintiff's Exhibit 33 for identification.

The Court: What is it? Another information sheet?

Mr. Kritzalis: Yes, sir.
The Court: Dated when?
Mr. Kritzalis: Dated—

The Witness: Yes, this is the same one.

Mr. Kritzalis: Dated May 1964, Doxford Information Sheet No. 4.

The Court: All right.

[693]

Mr. Kritzalis: May I have Plaintiff's Exhibit 33 [694] received in evidence, your Honor, for the same purpose as Plaintiff's Exhibit 32?

The Court: Received.

(Plaintiff's Exhibit 33 received in evidence.)

Q. To your knowledge, Mr. Bates, has the Sun Shipbuilding & Drydock ever come out with a publication recommending web deflection readings to crankshafts constructed by it as opposed to the wire gauge method? A. Do you mean outside of this courtroom?

Q. That's right, I am asking whether you know of any publications outside of this courtroom. A. I know of noth-

ing outside of this courtroom, only what's been produced in evidence here.

- Q. Are you referring to the testimony of Mr. William Smith? A. Am I familiar with it?
- Q. No, are you referring to the testimony of Mr. William Smith in making your answer? A. No, I am referring to the exhibit which was handed to me and discussed with his Honor.
- Q. What exhibit is that? A. It is the letter from Sun Doxford.
- Q. Is that the letter that's been— A. Which has the crank web deflection limitations [695] written into it. With unused bearings and worn bearings.

There are three sets of limits specified by Sun Doxford, undated. I am aware of those.

- Q. I hand you Defendant's Exhibit K in evidence, which is the Sun Shipbuilding letter dated September 14, 1960 (handing), a letter from Sun Shipbuilding to American Bureau of Shipping at Piraeus and I ask you what significance if any you draw from that letter. A. The only significance I draw from the letter is the diagram on the last page.
- Q. What significance do you attach to the diagram [696] on the last page? A. That it provides very interesting and useful information.
- Q. What kind of interesting and useful information? A. It gives the limits on the crank web deflections.
- Q. Is that the limits on crank web deflections while the vessel is—while the main engine is in operation? A. No.

Q. Do you take that diagram which is attached to Defendant's Exhibit K as a construction from the Sun Shipbuilding & Drydock Company that the web deflection method is preferable to any other kind of method for measuring main engine crankshaft alignment? A. It doesn't say so.

Q. Is your answer yes or no? A. It doesn't say so.

[697]

Mr. Kritzalis: I would like to know what makes the witness testify that the shipowner should on October 11, 1967 have measured web deflection. And I want to know whether his answer to that question would in any way be related to Defendant's Exhibit K. And I could get [698] a simple yes or no answer to that question—

The Court: Well, you can ask that.

Mr. Kritzalis: Would you read back the question?

(Question read.)

The Witness: The answer to the latter part is yes, it is related to K.

Q. In what way is it related to Defendant's Exhibit K? A. Because I think he should have measured web deflection.

Q. Are you saying that the guidelines that the shipowner should have used are those set forth in the diagram which is attached to Defendant's Exhibit K? A. I do.

^{*} Should be "an instruction" not "a construction".

[700]

Q. Did you ever ride a vessel that had a Sun Doxford engine in it? A. No.

[702]

- Q. What if I were to tell you that in October and November of 1962—well, first, that period October and November of 1962, does that fall within the period encompassed by Mr. Kennedy's hypothetical? A. Yes, his started in September.
 - Q. September of 1962? A. Yes.
- Q. If I were to tell you that in October and November of 1962 the numbers 2, 3 and 4—2, 3, 4 and 5 main engine bearings of the Hellenic Sailor were removed and replaced with new ones, would your answer to Mr. Kennedy's question [703] have been the same? A. Yes, inevitably. Because the information he posed to me was an increasing amount of sag and I would want to know partly what caused it and partly am I really safe with my crank web deflections if I was told—

The Court: The point is if they put in—
The Witness: If I was told that the bearings were
new I might even be a bit more worried because—

- Q. Because what? A. Well, do you have any other information with this? I mean did they take any other readings? You just tell me they go and renew something; they may have renewed the fuel injection pumps as well.
- Q. Let's solely address ourselves to the Nos. 2, 3, 4 and 5 main bearings. Let's assume for purposes of our hypo-

thetical that they were—the old ones were removed and new ones were put in and the alignment of the main engine crankshaft brought in as true an alignment as possible bearing in mind the installation of new bearings at those journals.

Is your answer still the same? A. That's a hypothetical, isn't it?

Q. It is a hypothetical on a hypothetical. My hypothetical on Mr. Kennedy's hypothetical.

[704] Would your answer to Mr. Kennedy be the same? Talking now just about the main bearing here. A. Yes, it would.

The Court: Well, I guess the point is you were basing your answer, I thought, in large part, on a comparison of September 1962 readings with October 1967, going from an 11 thousandths of an inch hog on No. 3 to a 42 thousandths sag—

The Witness: Yes.

The Court: -on No. 3.

The Witness: And what he-

The Court: Now if you put in new bearings, why, that sort of breaks the trend.

The Witness: It's chopped 11 thou out of the figure but it hasn't altered the fact that the sag is still increasing, steadily increasing year by year.

[705] The Court: In other words, if you assume that they put new bearings and there was perfection or near perfection—

The Witness: We still have 42 thousandths sag and that is enough in terms of the steadily increas-

Colloguy

ing sag for a prudent engineer to say, "Okay, I will check."

Q. Even though those figures may be well within the manufacturer's maximum permissible range, is that correct? A. I have not seen any figures from Sun Doxford which give the maximum permissible range of crankshaft misalignment.

Can you quote me any figures?

The Court: Well, you answer the questions. Your answer is that you have not seen any such figures.

All right, next question.

Mr. Kritzalis: I have no further questions, your Honor.

[707]

The Court: Are we going to—I guess we have Mr. Allen this morning.

Mr. Kritzalis: I have a statement to make on the record, your Honor, if I may.

The Court: All right.

Mr. Kritzalis: At the conclusion of Thursday's session, your Honor, in the robing room we had an extensive discussion. I took your Honor's suggestion to heart to re-evaluate the evidence, and I have done that over the intervening three days.

In my opinion, by all observable standards of proof, expert and otherwise, the proof is overwhelmingly in favor of the plaintiff shipowner on the issue of due diligence. It would appear to me from your

Honor's comments that two threads are left hanging. First, an issue with respect to the November Philadelphia reading, Plaintff's Exhibit No. 25, [708] upon which the plaintiff expressly did not and does not rely, that issue injected because of your Honor's cogent observation of the unexplained lines on that document, lines and figures on that Plaintiff's Exhibit No. 25, and the second thread with respect to Mr. Allen's state of mind at the time that he wrote his letter of November 6, 1967, a letter which we have submitted is clear on its face and has been the subject to questions and answers on Mr. Allen's deposition testimony.

We have concluded that no useful purpose would be served in calling Mr. Allen in in his present condition to explain away that letter. We feel that his testimony and the letter speak for themselves.

The Court: You mean the deposition?

Mr. Kritzalis: Yes, his deposition testimony; correct, your Honor.

The Court: All right.

Mr. Kritzalis: And the fact that from an objective standpoint in view of the expert testimony on the readings themselves, it is of no consequence to the plaintiff's burden in this case.

We have, with respect to the first thread, we have had the questioned document subjected over the weekend to professional expert analysis and we propose, and it will take only a few moments, to explain to your Honor the hitherto [709] unexplained lines and figures. And again we do that simply because

the question has been raised by your Honor and is in the case—and is inescapably in the case, but we never relied on it.

Second, we propose, since your Honor has these questions about what the condition of the alignment may have been in New York and in Philadelphia in November of 1967, we propose and very briefly propose to call and question one additional witness who will, I believe, tell your Honor, be able to tell your Honor by objective standards what that alignment condition must be.

[711]

The Court: Where does that ultimately leave us? I want to know, the crucial thing to me is whether Plaintiff's Exhibit 25 is or is not a record of the reading taken at Philadelphia on November 13.

Mr. Kritzalis: Fine, your Honor.

The Court: Now, you told me at one point in the trial when this problem came up about the indentations, you weren't contending any longer that Plaintiff's Exhibit 25 [712] was the Philadelphia reading. Now, are you changing your position now?

Mr. Kritzalis: I believe my position earlier, your Honor, if I may, was not that I—I was contending that that was simply that I didn't know and that in any event we were not relying on the numbers themselves of any Philadelphia readings as opposed to the fact of readings to make our plaintiff's case of due diligence. The reason being we had the professional ones done by Golten Marine Company. So from

plaintiff's point of view, whatever the Philadelphia readings were they were not being relied upon.

Now my position, your Honor, is that that document, regardless of our non-reliance upon it, cannot be the Philadelphia readings and most probably is the rough of the February 23 readings at Port Sudan, February 23, 1968, and that that sheet of paper, Plaintiff's Exhibit 25, was resting under the original of Defendant's Exhibit A, and I would like the original marked in evidence as opposed to the copy that has been marked by the defendants.

So the answer to your question, your Honor, is that the explanation now is that Plaintiff's Exhibit 25 could not be the Philadelphia readings.

The Court: So your position isn't changed.

Mr. Kritzaiis: That's right, your Honor. But [713] since there was an unexplained—the unexplained nature of the lines was such that we didn't want to leave this thread hanging, as it were.

The Court: You will recall that Mr. Evangelou got on the stand and testified under oath that there was no doubt that Plaintiff's Exhibit 25 was the Philadelphia reading.

Mr. Kritzalis: I do recall that, your Honor.

The Court: All right.

And the only break in that was when I looked at this document in the robing room and came out and said I am puzzled by all these indentations?

Mr. Kritzalis: That's right.

The Court: So as far as credibility, I think we have a serious problem about credibility of Mr. Evangelou. Now, we are talking about credibility right here and now. [714] And Mr. Evangelou then proceeded to testify, and this wasn't anything that anybody was suggesting, he was simply asked by Mr. Kennedy how come all of these indentations. And he said the way it happened was that he was using a pad and he was figuring out some readings and he made mistakes and he corrected them and he tore the sheets off in the course of the corrections and ended up with Plaintiff's Exhibit 25. That was his sworn testimony.

Mr. Kritzalis: That's right, your Honor.

[717]

Mr. Kennedy: Your Honor, you have put your finger on one of the defendant's problems. You may recall that initially we proposed a finding that Plaintiff's Exhibit 25 were the readings at Philadelphia, and the reason we proposed it is we knew that these were not satisfactory. Then in examining Plaintiff's Exhibit A for identification I noted the marked similarity between the so-called Philadelphia readings and the February 23 Port Sudan readings. So that rather than stipulate it, I thought it might be advisable if we would examine the chief mate on the subject to find out exactly where it came from. Because assuming that it was the Philadelphia read-

^{*} Should be "Defendant's" not "Plaintiff's".

ing, we would contend that it was improper; assuming it was not the Philadelphia reading we would say, well, where is the Philadelphia reading. And these are really the circumstances that led up to our refusing to stipulate a fact that we had proposed as a finding.

[718]

Mr. Kritzalis: I would like to correct, if I may, or address myself to one issue, and that is, we have been at trial now five days and I can appreciate that your Honor takes copious notes and I think we do, too. But with respect to Mr. Smith's testimony, it is not my recollection that Mr. Smith was ever asked to address himself to Plaintiff's Exhibit 25 marked for identification. Now, your Honor's notes may button that aspect up, but since the plaintiff never has relied on the readings themselves taken in November, which we know were taken, Mr. Smith was not asked that question, or those questions on that subject on direct examination. My best recollection is nor was he asked that on cross-examination.

The Court: He said that. I mean, I don't know how it came up, frankly, but there is no question he commented on Exhibit 25 and said—

Mr. Kritzalis: Fine, the record-

The Court: —said it was an unsatisfactory reading. And if I am wrong on that, you recognize that—

Mr. Kennedy: Your Honor, it may have been Mr. [719] Golten who commented that the exhibit indicated a dog-leg in the alignment and that this was not advisable.

Mr. Kritzalis: Your Honor, that's why I think the record on that issue will probably help us all out, but rather than putting my words into Mr. Smith's mouth, I would rather the record speak for itself.

The Court: Yes.

Mr. Kritzalis: I propose, your Honor, right after the noon recess to call Mr. Hilton who we will alert to be standing by. I don't expect that will take too much of your Honor's time.

The Court: What are we going to do until then?

Mr. Kritzalis: Until then the plaintiff proposes to address itself to the other issue, namely, what the readings in New York or Philadelphia—and Philadelphia, in November of 1967 must have been when the vessel departed those ports in November of 1967. We propose to do that by calling as the plaintiff's next witness Mr. Arne Haugestad.

Mr. Kennedy: Your Honor, isn't the best evidence of the readings at Philadelphia the plaintiff's records?

The Court: Well, of course it is, but I can't-

Mr. Kritzalis: Your Honor, we submit that by any objective standards of due diligence, the plaintiff shipowner has met those. The fact that we are being obliged, or [720] adverse inferences are being asked to be construed against us by non-production of numbers, it seems to me when we are talking about a crankshaft that weighs 120 tons and measures 44 feet in length, that we've got to use objective standards and reasonable standards, and the fact that three numbers are missing from a November 13, 1967

alignment reading is frankly irrelevant. And the relevance, your Honor—

The Court: Look. Look, Mr. Kritzalis, there is no amount of talk-Mr. Golten himself testified that a reading in a loaded condition would have been of interest-I forget his exact words, but I remember there was a question by Mr. Kennedy to Mr. Golten, and it was a long question and I jumped in and rephrased it, so I remember it fairly well, and probably didn't do any better, but the question wasthis was Mr. Kennedy's question, "Would the October 11, 1967 reading be more meaningful if the shipowner then obtained a reading in loaded condition?" And I think maybe I rephrased it slightly differently but it was, the question was asked as to that problem. And Mr. Golten said categorically he could make a better judgment on the basis of two readings. And so, to say that it is irrelevant, it just isn't getting at the problem.

The thing is, I am not going to—it is not going to help me decide this case to just have words coming out of [721] a lawyer's mouth. You've got to get down, you've got to face the problems and you've got to deal with them. And your problem is—and there's no way to toss it away, and that is that there was a recommendation, or a request, or however you want to put it, by Mr. Allen to take another reading, or other readings, one of which was to be in a loaded condition. Your own expert said that would have been meaningful in order to make a judgment. There is a log entry that a reading was made in Philadel-

phia. The results of that log entry are not produced. I don't know whether it was good, bad, or indifferent. I don't know whether it was serious, extremely serious, not serious. I don't know anything about it.

Now, to tell me that it is irrelevant means to me that Hellenic Lines isn't facing its problems in this case.

Mr. Kritzalis: Well, your Honor-

The Court: I want you to do that for your sake and for mine and for your client's sake, and it is another problem which, of course, to say that you've got an overwhelming case mystifies me. You've got the whole area which we didn't go into in the robing room, and that is the situation of the recommended readings of web deflection, and that is a whole new question. But, to come and say that the—well, there is no use getting into a lot of argument at this point.

[723]

The Court: Let me correct one thing I said. I said I remembered Mr. Smith saying that the Plaintiff's Exhibit No. 25 readings were unfavorable. That was a mistake. What did happen, according to my notes, was this: On Mr. [724] Smith's cross by Mr. Kennedy, the question came up about a hypothetical set of readings which had been discussed at various times of 32, 22, 32, and he said that was a dog-leg and not a good condition. So whatever that signifies, it signifies, but it wasn't the way I had remembered it.

ARNE HAUGESTAD, called as a witness by the Plaintiff, was duly sworn and testified as follows:

Direct Examination by Mr. Kritzalis:

Q. Mr. Haugestad, by whom are you employed? A. Golten Marine Company.

Q. For how long have you been employed by Golten Marine Company? [725] A. Approximately 30 years.

Q. In what capacity are you presently employed with Golten? A. Traveling troubleshooter, service engineer.

Q. For how long have you been occupying that position with Golten? A. Approximately 15 years.

[726]

Q. What would that be? What would you be trying to measure with a nemline or the wire gauge? A. The alignment of the crankshaft.

Q. Did you use the web deflection method? A. Not on the Doxfords.

Q. On what ships would you use the web deflection method? A. On all other engines with a stiff shaft.

Q. How long ago did you begin using the wire gauge method exclusively on Doxfords, roughly? A. How long did the Hellenic Line own the HELLENIC SAILOR?

[727] Q. That's how long? A. Twenty years, isn't it.

Q. Would you ever use the web deflection method on the HELLENIC SAILOR'S main engine crankshaft? A. No.

Q. Why not? A. Wouldn't bother with it, it only disturbs the whole picture because these deflections are so different from web to web.

[728]

Q. Would this characteristic of differences in deflection from web to web be unique on the Doxford design? A. Yes, absolutely.

Q. Over the years did you do wire gauge readings on ships other than Doxford ships? A. Occasionally.

Q. On ships other than Doxford-powered ships, what method would be used to measure shaft alignment? A. Deflection.

Q. The web deflection? A. Web deflection.

Q. Between the center webs? A. Right.

The Court: You said you would use web deflection readings on other types of crankshafts; is that right? [729] The Witness: That is correct.

The Court: And those would be the stiffer crank-shafts?

The Witness: Yes.

The Court: Is that what you are saying?

The Witness: Yes.

Q. Would you most commonly use the web deflection method on other kinds of crankshafts other than Doxford?

A. That's practically all we use on all the engines.

Q. Did there come a time in February of 1968 when you were dispatched to Port Sudan to attend the Hellenic Sallon? A. I remember.

Q. Could you tell me the circumstances under which you were sent to Port Sudan? A. No. Well, briefly, I was called by Harry Petsis, I believe, port engineer, and—yes, they booked my passage all the way through to Port Sudan.

Q. Did you take implements with you? A. Yes.

Q. What was the purpose of your going to Port Sudan?

A. To check the alignment of the main engine crankshaft.

Q. What instruments did you take with you? [730] A. I took with me a Keuffell and Esser—it was called an optical level.

Q. Would this be commonly referred to as the telescope method? A. Yes.

Q. As opposed to the wire alignment method? A. Right.

Q. Did you take the wire alignment equipment with you as well? A. No, I didn't.

Q. Why did you take the Keuffell and Esser equipment? A. Well, we prefer that if we possibly can have a dead ship, nothing running.

Q. You would use the telescope method? A. Yes. Telescope cannot be used with any auxilliary equipment running.

[731]

Q. I show you Plaintiff's Exhibits 36, 37, 38 and 39 marked for identification (handing), Mr. Haugestad, and I ask you whether you can identify those documents. A. Yes, I know the documents.

Q. To the best of your recollection do you remember the date on which you boarded the Hellenic Sailor? A. I do not.

Q. Could you tell us what Plaintiff's Exhibits 36 through 39 represent, starting with Exhibit 36? A. Well, they are self-explanatory, I would say. They were all performed on February 3—well, they are dated February 3, we actually worked a couple of days on that.

Q. Would you address yourself to the two hand-drawn ones, Plaintiff's Exhibits 36 and 39?

Now, I notice that the readings on Plaintiff's Exhibit 36 marked for identification, which is a—well, first of all, is that your handwriting on Plaintiff's Exhibit 36 for identification? A. It is. That is my handwriting.

Q. Now, is that your handwriting on Plaintiff's Exhibit No. 39 for identification? A. It is.

[732] Q. And is it your testimony that the readings contained on both of those exhibits were done on February 3, 1968? A. February 3rd or 4th. I spent a couple of days there.

Q. I note that the readings differ as between the readings on Plaintiff's Exhibit 36 and the readings on Plaintiff's Exhibit 39, both marked for identification. Can you tell me the circumstances under which you took the readings reflected on both of those documents? A. Yes. We first took—

The Court: Now you are working now with-

Mr. Kritzalis: The two handwritten ones.

The Court: Exhibits 36 and 39; is that correct?

Mr. Kritzalis: Correct. The Court: All right.

A. We put, for the first reading, we put No. 1 center crank 45 degrees before top dead center.

Q. And why did you do that?

The Court: Now, which reading is that?

Mr. Kritzalis: That's Plaintiff's Exhibit 36 marked for identification, your Honor.

A. Well, it is only about four positions you can get the wire all the way through without removing the connecting rods.

[733] The Court: Now, wait a minute. For 36 you put the No. 1 center crank 45 degrees—
Mr. Kritzalis: Before top dead center.

Q. Is that the initials that appear on that document, "BTDC"? A. Yes. Before top dead center.

Q. What was the position on Plaintiff's Exhibit 39 of the crankshaft? A. So we decided, Charlie Allen and I decided to turn it 180 degrees to find out if there was any difference. So we turned the center crank to 45 degrees before bottom dead center. That means we turned the shaft 180 degrees, and took another reading.

Q. And that would be reflected on Plaintiff's Exhibit 39 marked for identification? A. Right.

Q. I notice some writing on top of Plaintiff's Exhibit 39 marked for identification and I also notice two sets of readings on the diagram. The second set, the lower set apparently reflected by a dotted line. Can you account for the two different readings on Plaintiff's Exhibit 39 marked for identification? A. Yes. When I took this reading, the first two readings, No. 2 connecting rod, piston, was removed from [734] No. 2 crank.

Q. Was that the broken crank, to the best of your recollection? A. No. 2 crank.

The Court: Now, what had been done? This was before any of these readings?

The Witness: Yes.

The Court: All right. And what had been done, please, again?

The Witness: Piston and connecting rods disconnected from No. 2 crank.

- Q. Now, was that the state of affairs with respect to both sets of readings on Plaintiff's Exhibit 39 marked for identification? A. Yes. And removing all that weight from No. 2 crank might give a different reading, not a correct reading. So in order to compensate for that weight that was taken off there we put on No. 2 and 3 bearing caps and pressed the bottom bearings down in place. And we repeated the reading.
- Q. And are those readings reflected by the figures along the dotted line? A. That is correct, and a very slight difference.

The Court: So what did you do? You did what?

Q. Now, once again-

[735] The Court: I just didn't get it.

Mr. Kritzalis: I didn't either, your Honor.

The Court: All right.

Q. Once again, Mr. Haugestad, what was the purpose, or what is the significance of the figures on the dotted line as opposed to the figures along the straight line? In other words, how were those taken? A. Well, we just wanted to check if the weight of the removed parts had any influence on alignment, that's all, and they didn't. Very little.

The Court: What did you do? What did you do to—you said you connected something, or tightened something, and I didn't get that.

The Witness: Yes. We removed shims on No. 2 and 3 main bearings and pressed the shaft down. With the bearing bolts.

- Q. How do you remove shims, and what are shims? A. You just lift the top cap and remove a few shims and—
 - Q. Shims are what? A. Adjustment shims for clearance.
 - Q. Shims are pieces of metal? A. Pieces of sheet metal.
- Q. Where do these pieces of sheet metal go? [736] A. On the joint of the base. The bases are made of two halves, in the bearing and then the cap. The two of them are shims. So you remove a bundle of shims from each and just press it down.

The Court: You tighten the bearing bolts?

The Witness: You tighten the bearing bolts in order to press the cap—

The Court: And you did that on No. 2 and No. 3 bearing?

The Witness: No. 2 and 3 bearing.

- Q. Was that on No. 2 and 3 bearing? A. That is correct.
- Q. Now, what effect would the removal of this shim material from the bearing joints have on the readings? A. Well, if you leave the original shims in there you don't have any pressure on the shaft because you still have your running clearance. By removing shims you get contact with the top half—you get contact between the top half bearing and you—

Q. In other words, you are squeezing the top of the main journal— A. You are squeezing everything right down.

Q. And you tighten that up? A. Yes.

[737] Q. Again, what was the reason for doing that? A. Because we had removed, or there was removed before I came there, No. 2 connecting rod and piston.

The Court: Was it physically removed or was it just disconnected?

The Witness: It was removed, or lifted clear of the shaft, anyway. I don't remember that.

- Q. But it was in no way connected to the shaft. A. So we had no benefit of the weight of the connecting rod and piston; on an engine like this it is several tons, you know. It makes a difference on alignment.
- Q. So that you wanted to get readings— A. The true figures.
- Q. The true figures. And are those figures represented by the figures along the dotted line of 20 thousandths of an inch at No. 4 main bearing, 21 thousandths at No. 3, and 21 at No. 2 main bearings? Are those the figures on the bottom of the two sets of figures on Plaintiff's Exhibit 39? A. The bottom figures—
- Q. That would be with the shaft pulled down tight? A. That is correct.
- Q. Do you have an opinion as to whether the pulling down tight of the bearings on the shaft would compensate for the removal of the connecting rods from the shaft? [738] A. It would more than compensate.
- Q. Would it be fair to say then that on or about February 3, 1968 you in fact took three sets of readings? A. Yes.

Q. In different conditions? A. Yes.

Q. And those are reflected by Plaintiff's Exhibits 36 and

39; is that correct? A. Right.

Q. Now, there is one by Plaintiff's Exhibit 36 and two by Plaintiff's Exhibit 39. And when I say two on Plaintiff's Exhibit 39, I mean both in the first instance without the shaft being pulled down tight and in the second instance with the shaft being pulled down tight. A. Yes.

Q. Now I ask you to address yourself to Plaintiff's Exhibits 37 and 38 marked for identification. Those are the printed readings. I ask you what their significance is with respect to Plaintiff's Exhibits 36 and 39. A. 38 and 37

shows an excellent alignment.

Q. No, first with respect to the readings themselves, under what circumstance was Plaintiff's Exhibit 37 marked for identification done? A. Yes. That was taken with the center crank at 45 [739] degrees before bottom dead center.

Q. In comparing the figures myself I note that the figures on Plaintiff's Exhibit 37 marked for identification corresponds exactly to the figures on Plaintiff's Exhibit 39 marked for identification along the broken line, in other words, with the shaft pulled down tight. Is that correct? A. Yes.

Q. Would it be fair to say that 38 marked for identification is the final copy of the top set of figures on Plaintiff's Exhibit 39 marked for identification, to wit, 19 thousandths at No. 4, 16 thousandths at No. 3, and 15 thousandths at No. 2 main bearings? A. Yes, same reading.

Mr. Kennedy: Your Honor, Plaintiff's Exhibit 36 marked for identification contains readings showing

16 thousandths at 4, 3 thousandths at—26 thousandths at 3, and 2 thousandths at 17.—I'm sorry, 17 thousandths at 2. Did I understand the witness to testify that 36 is the rough for either 37 or 38?

[740]

Mr. Kennedy: His answer is yes?

Mr. Toy: I would ask the witness which exhibit it is the rough for. Noting that Exhibit 36 marked for identification specifies that the readings were taken with the No. 1 center crank 45 degrees before top dead center.

The Witness: These two are mine. These are made in the office (indicating).

[741] Q. When you say these two are yours, which ones are you referring to as yours? A. Exhibit 36 and 39.

Q. And which two are you referring to as being done in the office? A. 38 and 37.

Q. Which are the ones that you did yourself at Port Sudan when you were there? A. That is 36 and 39.

Mr. Toy: It would be your testimony that 36 and 39 marked for identification are the accurate reflection of the readings that you took at Port Sudan?

The Witness: Correct.

Mr. Kritzalis: Your Honor, I offer Exhibits 36 and 39 in evidence.

The Court: Is there any objection?

Mr. Kennedy: No objection.

The Court: All right.

(Plaintiff's Exhibits 36 and 39 received in evidence.)

Q. Addressing yourself to Plaintiff's Exhibits 36 and 39, Mr. Haugestad, do you have any opinion as to whether those readings are satisfactory? [742] A. They are both very good.

Q. I ask you to refer to the October 11 reading which has been previously marked Plaintiff's Exhibit 23 in evidence, that is, the October 11, 1967 readings. Do you recognize those readings? A. I have probably seen them before.

Q. Do you recognize that diagram as one of your firm's? A. Yes, it is done by Golten Marine Company.

Q. Do you have any opinion as to what those readings reflect? A. Satisfactory shaft alignment.

The Court: I didn't hear.

The Witness: Satisfactory alignment.

The Court: Did you take the October 11 readings?

The Witness: I don't believe I did.
The Court: Do you know who did?

The Witness: No.

Q. Mr. Haugestad, do you have any opinion as to whether the readings shown on Plaintiff's Exhibit 36 and Exhibit 39 taken at Port Sudan could be materially different from readings of the shaft alignment at the time that the vessel sailed from the Port of New York or the Port of Philadelphia on the voyage at issue? A. The readings should be

within a few thousandths [743] because there was no more cargo taken between New York and Port Sudan.

- Q. I believe you have testified that the readings reflected by the October 11, 1967 diagram are satisfactory; is that correct? A. Yes, they are satisfactory.
- Q. Do you have any opinion as to whether as between the readings shown on the Exhibits 36 and 39 as having been taken at Port Sudan in February and the readings as shown on Plaintiff's Exhibit 23 as having been taken on October 11, [744] 1967, there might have been any shaft alignment which could be considered misalignment? And if you don't understand the question, just tell me and we will have it read back to you. A. You would have to try to rephrase that. As* the question again.

The Court: Yes, go ahead, rephrase it.

- Q. We have the readings on October 11, 1967; is that correct? A. Right.
- Q. And those readings you say are satisfactory? A. Yes.
 - Q. And those readings show a sag? A. Yes.
- Q. And that sag is 32 thousandths at No. 4 main bearing, 42 thousandths at No. 3, and 32 thousandths at No. 2? A. Correct.
- Q. Are you interested in the draft when those readings were taken? A. Yes, of course.
- Q. Now, we also have your readings taken in three different conditions at Port Sudan on February 3, 1968; is that correct? A. Yes.

^{*} Should be "Ask" not "As."

[745] Q. You have also testified that those readings were satisfactory with respect to the shaft alignment? A. They are very good.

Q. Do you have any opinion as to what might have to happen to the Hellenic Sailor's main engine crankshaft between the taking of the October 11 reading and the taking of the February 3 reading to adversely affect the main engine crankshaft? A. I can't see what could have happened. This is a normal difference between a light and a loaded ship, the difference between—that is between October and February.

Q. What would you expect would happen to the readings of the October 11 readings during the normal course of events as the vessel proceeded and loaded cargo? A. Well, it is perfectly clear what happened. She got loaded and she straightened out somewhat. To a better alignment.

Q. To a better alignment? A. Yes.

Q. And this would have come from loading? A. Yes. [746] Q. Loading of cargo? A. Yes.

Q. In the forward . . . Yes.

Q. So if I were to tea ou that at Philadelphia and New York the vessel was approaching full load and actually sailed at full load on the veyage at issue, do you have an opinion as to what the shaft alignment might have been on those two occasions? I am talking now following the October 11 reading and before the February 3 readings. A. Well, I believe if this shaft alignment had been checked after final loading you would have found it very close to the Port Sudan readings.

Q. And these are the readings of February 3, 1968? A. Yes.

Q. And those are the readings that you yourself took? A. Yes.

Cross Examination by Mr. Kennedy:

- Q. Mr. Haugestad, when you commented concerning the October 11 reading and the February 3 reading and you said they were, I think, very good readings— [747] A. Yes.
- Q.—was it because of the homogenous curve that you say, that is, a sort of a smooth curve starting at No. 5—A. Yes.
 - Q. —and ending at No. 1? A. Yes.
- Q. Am I correct in stating that the two readings that I have just referred to indicate that the vessel's crankshaft was in a sagged condition? A. In a sagged condition.
 - Q. Sagged condition? A. Yes.
- Q. Now, with respect to sag, and how you would characterize a given sag, can you tell me the point at which you would consider a sagged crankshaft not in proper alignment? A. Well, there's certain limits you can go to. For instance—should I talk?
- Q. Yes. A. Take this October reading. If we had come down to, let's say, 60 thousandths in the center, I would have suggested to do something that time.
- Q. What would 60 thousandths indicate? [748] A. Well, you are getting kind of low. The engine builders go much lower than that.
- Q. Well, you are getting kind of low from what point of view? A. Well, you are getting excessive stresses in the shaft.

- Q. So the lower the sag the greater the stress in the sag? A. That is correct.
 - Q. In the shaft, rather? A. Yes.
- Q. What would you do with respect to the main bearings, if anything, in order to decrease the sag? A. Re-metal and machine to a high crown thickness.
- Q. Is it true that theoretically at least the most desirable crankshaft alignment is zero, that is, from the standpoint of misalignment? A. Yes, straight as possible. Straight, even condition. But you can't have that all the time.
- Q. It depends upon the draft of the vessel; is that right? A. This (indicating).
- Q. As a general proposition, isn't it true that a ship such as the Hellenic Sailor when in a hogged position would [749] be expected to have a hogged crankshaft and when in a sagged—

Mr. Kennedy: Strike that.

Q.—when in a loaded position would be expected to have a hogged crankshaft and when in a ballast position would be expected to have a sagged crankshaft? A. You are right.

The Court: Would you read the question? (Question read.)

Q. Referring now to your Port Sudan readings, I believe it is your testimony that the connecting rods were disconnected at the No. 2 crank; is that correct? A. That is correct.

- Q. And you said that in order to compensate for this you removed the shims from the Nos. 2 and 3 bearings; is that correct? A. Yes, that is correct.
- Q. And you said that in removing the shims and tightening up the bearing you were in effect compensating for this disconnection of the connecting rods; is that correct? A. Yes. We did more than compensate.
 - Q. You did more than compensate? A. Yes.
- Q. Did you do any calculations to come to this [750] conclusion? A. No.
- Q. Did you remove the shims in connection with both readings, that is—now, in connection with your preparation of Plaintiff's Exhibit No. 39, I take it that you took an alignment reading with the No. 1 center crank 40° degrees before bottom dead center? A. Correct.
- Q. And is it your testimony that prior to removing the shims, the sag at No. 4 was 19 thousandths of an inch, at No. 3 it was 16 thousandths of an inch, and at No. 2 it was 15 thousandths of an inch? A. Yes, whatever the figures are.
 - Q. Whatever is shown on the exhibit? A. Right.
- Q. And after removing the shims, you got increases at 4 to 20 thousandths, 20 thousandths of an inch at 3 to 21 thousandths of an inch—

Mr. Kritzalis: Could the witness be looking at the document?

Q. —21 thousandths of an inch; is that correct? A. Yes. Whatever is on that paper is correct.

^{*} Thus in the original. Should be "45".

The Court: He is just reading it.

- Q. Referring to Plaintiff's Exhibit 39. Now, when you [751] prepared Plaintiff's Exhibit No. 36, this is when the crank position at No. 1 centercrank was 45 degrees before top dead center. A. Correct.
- Q. Were the shims removed or were they not removed? A. They were not removed.
- Q. Why didn't you remove the shims on that occasion? A. Well, this is a deal we got to see how much effect the removal of the No. 2 drive unit influences—that is, the connecting rod and piston and piston rod.
- Q. Is it your testimony, then, that when you prepared Plaintiff's Exhibit 36 the connecting rods at the No. 2 crank were not removed? A. Beg pardon?
- Q. Were not removed? Were attached, that is? A. No, no. They were—
- Q. They were removed? A. They were removed when I arrived in Port Sudan.
- Q. So that if in preparing Plaintiff's Exhibit 36 you had removed the shims from the bearings, would you have expected to get a greater sag than is reflected on Plaintiff's Exhibit 36? A. Yes. We always expect to find that.
- Q. You get a greater sag? [752] A. Greater sag when you press down the base, press down the shaft, yes.
- Q. Referring now to Plaintiff's Exhibit No. 36, if you had removed the bearing shims at the No. 3 main bearing, do you have any idea as to what the sag would be, or, what sag would be shown at that position? A. You probably obtain the same difference as you would on the Exhibit 39.

Q. So you would go from 26 thousandths of an inch sag to 35 thousandths of an inch sag? A. Something like that.

Q. Is that your testimony? A. Something like that.

The Court: Wait a minute. I don't get your arithmetic. 26 to—the difference on Exhibit 39 between the situation with the bolts tightened is about five thousandths.

Mr. Kennedy: It should be 31.

The Court: So if we use the same arithmetic, it is 31 at 3; is that right? It would be 31 at No. 3?

The Witness: That is correct.

The Court: All right.

Q. And again with respect to main bearing No. 2 on Exhibit No. 36, your reading would be increased by 6 thousandths of an inch. Is that correct? [753] A. Approximately. You have to realize they are two different shaft positions. There might be a slight difference there, a couple of thousandths.

The Court: Well, you would use—if you just assume that the differentials were the same, it would increase on Exhibit 36, it would increase the sag at No. 4 from 16 thousandths to 17 thousandths, would it not?

The Witness: No, your Honor. We only applied pressure on No. 2 and 3. We didn't touch No. 4.

The Court: Yes, but that increased pressure at No. 3 caused differences in No. 4 and No. 2, didn't it? The Witness: We removed the shims from No. 2 and 3 and—

The Court: No. 2 and 3 bearings.

The Witness: 2 and 3 bearings. We got one thousandth difference on No. 4.

The Court: That's what I am saying. And you had 6 thousandths difference on No. 2.

Wait a minute. It is No. 2-

Mr. Kennedy: Main bearing.

The Court: It is No. 2 main bearing where you-

Mr. Kennedy: Well, the-

The Court: I guess I am confused at this point. The side connecting rods for No. 2 piston were disconnected; [754] is that right, Mr. Haugestad?

The Witness: Yes.

The Court: And now tell me again what was it that you did to compensate and where did you do it? I guess I am not clear.

The Witness: Well, we removed adjustment shims, you use shims for adjustment on the crank-

The Court: How do you spell shims?

The Witness: S-h-i-m.

The Court: You removed shims at what points?

The Witness: At No. 2 and 3 main bearings. The Court: And you tightened the bearing bolts?

The Witness: Yes. That in due course presses the shaft tight against the bottom bearing.

The Court: All right, Mr. Kennedy.

By Mr. Kennedy:

Q. Mr. Haugestad, referring to Plaintiff's Exhibits 39 and 36, can you tell me how you would account for the difference in sag at the No. 3 position? A. Difference in sag? In the two positions? Slight runout in the shaft.

- Q. A slight- A. Runout.
- Q. —runout? [755] A. She's not running perfectly true.
 - Q. A little out of alignment? A. Yes.

The Court: Wait, what are the differences you are talking about? You are comparing the—

Mr. Kennedy: Exhibits 36-

The Court: —Exhibit 36, the 26 thousandths reading; right? And you are comparing it with the 18 thousandths reading on 39, which is without the compensation?

Mr. Kennedy: That's right.

The Court: All right.

- Q. Is there any other position to which one might turn the center crank other than the two that are shown on Plaintiff's Exhibits 36 and 39? A. There's two more positions.
- Q. If I were to ask you to take readings in these two other positions, would they be different from the readings shown in 39 and 36? A. You always find a few thousands difference.
- Q. Which reading would be most apt to tell me the maximum position of sag in the crankshaft? A. Only one way to find out, take the readings.
 - Q. You would have to take four readings? A. Right.

[756]

Q. Referring to the October 11 alignment reading, is [757] there any position shown for the No. 1 center crank in that reading? A. No.

- Q. Is that because it is a wire alignment reading? A. We don't always put it on.
 - Q. You don't always put it on? A. No.
- Q. So in looking at that document, I wouldn't be able to tell at which position the No. 1 center crank was; is that correct? A. No, you wouldn't be able to tell.
- Q. Mr. Haugestad, would the fact of a fracture in the No. 2 afterside web in any way affect the alignment readings that you took at Port Sudan in February of 1968? A. No, we still have the—the crack was over at one end of the journal. The journal was—most of it was still intact and laying in the—
 - Q. Most of it was still intact? A. Yes.
- Q. The journal or the web? A. The journal, the web, too. The crack was hardly visible.
- Q. If the web is cracked, isn't it likely to affect the alignment of the crankshaft? [758] A. Not this type of alignment, no. That would affect—
 - Q. Web deflection? A. Web deflection, yes, very much.
- Q. In looking at Plaintiff's Exhibit 38, the alignment reading you took at Port Sudan on February 3, could you tell me what deflection may have been between the main webs of the No. 4 crank? A. No.
- Q. Is your answer the same with respect to the No. 3 crank? A. I have no idea.
 - Q. No idea? A. No.

The Court: I was looking at something, Mr. Kennedy. You are questioning him about—well, let's have the last couple of questions and answers.

(Record read.)

- Q. Meaning no? A. No.
- Q. Same answer with respect to the No. 2 crank? A. Correct.
 - Q. And same answer with respect to the No. 1 crank.

Now, in taking a wire alignment reading or telescopic alignment reading, are you concerned per se with [759] alignment or are you really concerned with web deflection? A. Well, a great sag, of course, or hog, whatever you have, the greater the sag or hog, the more deflection you have.

- Q. And when you are trying to get the shaft into alignment are you trying to minimize the web deflection? Is that what you are trying to do? A. Trying to minimize the excessive stresses.
- Q. Which come about because of web deflection? A. That is correct.
- Q. You are trying to decrease the web deflection? A. Right.
- Q. Would it be helpful to you if in the course of your checking, or taking were or telescopic alignment readings of the Hellenic Sahor, you knew what, if any, web deflection—strike that—you knew what the recommended web deflections were for the particular vessel? A. We don't know the recommended deflections at all for that—
- Q. What if you knew them? Would it help you? A. It would be very interesting to check them.
- Q. You would check them? A. It would be very interesting to use the figures and check them.

[760] The Court: Let me have the last couple of questions and answers, please.

(Record read.)

Q. Just so I understand you, Mr. Haugestad, you would be interested in checking actual web deflection readings having in mind recommended readings against a particular alignment of the crankshaft as reflected by the telescope or the wire; is that correct? A. Personally, I am not really interested in it, no.

Q. You are no longer interested in it? A. No. We have never used them on this type engine.

The Court: The disadvantage of repeating a question.

Q. Mr. Haugestad, did I understand you to say that deflection characteristics are different from—web deflection characteristics are different from engine to engine, or was it from web to web? A. From web to web also.

Q. Also; both? A. Both.

The Court: That's in a Doxford; is that right?

Q. In a Doxford? A. This goes for the Doxford only, yes.

The Court: While I think of it, I think at the beginning of Mr. Kennedy's questions you said that if there [761] was a reading of about 60 thousandths, let's say, at that No. 3 bearing, that there was a sag of 60 thousandths, you would have suggested doing something?

The Witness: That is correct, your Honor.

The Court: And I think you were talking then about the October 11 reading, if that had shown 60

thousandths. Is that what you meant to say?

The Witness: Yes.

The Court: And am I correct that the 60 thousandths you are talking about would relate to a vessel in a light condition?

The Witness: Correct.

The Court: And if you saw a 60 thousandths reading in a vessel in a light condition you would regard it as something to do something about; is that right?

The Witness: In a case like that I would discuss it with the owners, the port engineer—

The Court: But you would inquire further; is that right?

The Witness: I let her go, it's safe.

The Court: And then, now, let's suppose that you took a reading of the same vessel in a loaded condition. Now, can you tell me what you would regard as the point in a loaded condition, the amount of sag which you would regard as the [762] same kind of a warning?

The Witness: Well, if I find one like that at 60 thousandths in loaded condition, I would be alarmed. But then again I am only there to recommend corrections.

The Court: Yes, you are not the shipowner. But we are talking about your view.

The Witness: That is my view, yes.

The Court: Now, this is what I am trying to clear up in my own mind. The sag, the degree of sag or hog will change as the vessel goes from a light condition to a loaded condition, will it not?

The Witness: Yes.

The Court: Normally; is that right?

The Witness . That is correct.

The Court: Now, you mentioned a figure of 60 thousandths sag as being a figure where if you saw it you would be concerned, or whatever it was you said; right?

The Witness: Yes.

The Court: And you would report it to the owner and discuss it further and so forth; is that right?

The Witness: That is correct, your Honor.

The Court: And that 60 thousandths that you have mentioned, are you talking about, does that refer to a sag in a light condition or a loaded condition?

[763] The Witness: Light.

The Court: All right. Now, on a vessel like the Hellenic Sailor, let's consider readings in a loaded condition. Now, what is the maximum reading in a loaded condition before you would take it as something to be alarmed or concerned or to inquire further about?

The Witness: Well, your Honor, the figures I use is just from experience.

The Court: I understand that.

The Witness: Nothing in books about it.

The Court: All right, but if you have in mind a comparable figure to the 60 thousandths, a comparable figure that relates to a loaded condition—

The Witness: Yes. The Court: What?

The Witness: A loaded condition, well, there would be another 20 thousandths, that's all minus 20.

The Court: In other words, if you found a 40 thousandths in a loaded condition, you would be concerned?

The Witness: Yes. A little concerned. In a case like that you always discuss it with the port engineer and see if they want it fixed. Okay?

The Court: All right. I understand. This is the point you would talk about and have enough concern to inquire [764] further about and so forth; is that right?

The Witness: Right.

The Court: All right. Now, just along the same line I thought you told Mr. Kennedy that you would expect a vessel like the Hellenic Sailor in a loaded condition to go to a hog as far as the crankshaft is concerned?

The Witness: Yes; right.

The Court: Now, let's assume that the vessel in a loaded condition does not go to a hog, it has a sag of the kind shown in these Exhibits 36 and 39; right?

The Witness: Yes.

The Court: And it is loaded; right?

The Witness: Yes.

The Court: Is that of any concern to you?

The Witness: No.

The Court: Why not?

The Witness: Well, the figures are not alarming. The Court: All right. I am just going back to

this one point. You said you would expect the vessel to go to a hog?

The Witness: Yes, I would.

The Court: Let's assume it doesn't go to a hog; right?

The Witness: Yes.

[765] The Court: And it is fully loaded.

The Witness: Yes.

The Court: And it has a sag.

The Witness: Yes.

The Court: And let's assume it has the kind of a sag shown in these Port Sudan readings.

The Witness: Yes.

The Court: I don't mean to repeat, but you said earlier you would expect it to go to a hog, but you have a sag. Now you say that is no cause for concern?

The Witness: No.

The Court: Why not?

The Witness: As long as you don't exceed these figures here, well, there is no set figures for the sag, at all the Sun shipyards you can go to 128 thousandths which is an eighth of an inch, but that is excessive. That I consider excessive.

The Court: Please, I don't mean to belabor this, but the point I am trying to get at is it doesn't concern you, the failure to go to a hog?

The Witness: No, not at all.

The Court: Not at all.

Why is it that you would expect it to go to a hog? The Witness: Well, I believe when this ship was [766] new she came out with a fairly straight shaft, straight engine. I believe so. I don't know.

The Court: Well, you are assuming so? The Witness: Assuming so; correct.

The Court: All right.

The Witness: Well, when she gets up to a certain age, things change a little bit, it looks like, because all the years I've known this ship she never had a hog under any condition. Never had a—hog, yes. Never.

[767]

- Q. Mr. Haugestad, your company, I believe, services Hellenic Lines in New York? A. Yes.
- Q. Have you done any wire alignment readings for the other Doxford ships that are owned by that company? A. All of them.
- Q. Do you know that Hellenic has two British Doxfords? A. Yes.
- Q. During the course of your work for Hellenic Lines with respect to wire alignment readings, have you come into contact, or had occasion to see a circular entitled, "Doxford Information Sheet No. 4"? A. I might have seen it, but I can't recall now.
 - Q. You can't recal! it? [768] A. No.
- Q. I hand you a document, sir, a Xerox copy has been marked Plaintiff's Exhibit E. I think it is Sheet No. 3—

The Court: Defendant's Exhibit E.

Mr. Kennedy: Defendant's Exhibit E. I'm sorry, your Honor.

The Court: All right. I have the original if you want that.

- Q. Chief, mark No. 3 is the telescope reading alignment prepared by Golten Marine Co., Inc.; is that correct, sir? A. Yes, that is correct.
- Q. Would it be fair to say that the reading as reflected in that document shows a hog? A. That is a hog, yes.

The Court: Mr. Haugestad, I am puzzled by your [769] testimony that you could say that the February 3 reading would likely be the same as the reading upon leaving New York.

Now, between the time of leaving New York for this voyage and February 3, the crankshaft web fractured; is that right?

The Witness: Yes.

The Court: We know that. Now, where is Exhibit B?

The Court: Yes, Defendant's Exhibit B. It is the photo of the fractured web.

The Court: I don't know where this was taken, but was this the condition of the crankshaft web when you saw it, Mr. Haugestad (handing)?

The Witness: I have never seen this.

The Court: What was the condition of the crankshaft [770] web when you were there taking your alignment readings on February 3? What did it look like?

The Witness: The shaft was intact. Except for the crack.

The Court: Did you see that crack?

The Witness: Yes.

The Court: So that the web was sitting there, but it was cracked; is that right? It hadn't been taken apart?

The Witness: No.

The Court: How big was that crack?

The Witness: I can't remember these figures.

The Court: Well, I am not asking you for measurements, but what did it look like? Did it start at one end thin and then get wider at the other end, something like that?

The Witness: I believe there's photographs of this crack someplace. I believe I saw them.

The Court: I am asking for your memory. Do you remember?

The Witness: No, I can't remember.

The Court: All right. But it was cracked.

The Witness: Yes.

The Court: We've got to assume that the condition of that shaft was such as to cause this crack; right?

The Witness: Condition of the shaft? I don't [771] understand that—

The Court: The stresses in the shaft were sufficient to crack that web; is that right?

The Witness: Yes.

The Court: All right. And there is no evidence of any metal defect inside, the only evidence is this was a bending crack. Do you understand that?

The Witness: That we have no proof of.

The Court: We have no proof of anything but a bending crack I am saying to you. All right?

The Witness: Your Honor, I-

The Court: I am just telling you what is in the case, and you take that as I give it; all right?

The Witness: Yes.

The Court: And that means that there was enough web deflection to bend that web and crack it; do you understand? You take that as given; all right?

The Witness: No.

The Court: Well, I am asking you to.

The Witness: All right. I will take it as given. The Court: Now, how much crankshaft misalign-

ment or web deflection or whatever you want to say, how much would it take to produce a bending crack of that kind?

The Witness: I don't follow you, your Honor.

[772] The Court: Well, how much sag, let's go back to our old terms, how much sag in a crankshaft do you believe there would have been at the moment of that fracture?

The Witness: I believe, your Honor, when this shaft broke, she had just about the same sag as when she left the last port of loading in Europe.

The Court: But I want you to start with this—maybe you can answer this, I don't know—but I want you to focus on the fact of the fracture and try to tell me if you've got any opinion as to how much sag there was in that shaft at the moment before the fracture.

^{*} Should be "New York" not "Europe."

The Witness: She had—that shaft had no more sag than the sag that was detected by me after she was patched up in—

The Court: That was enough of a sag to cause the fracture then, wasn't it?

The Witness: Your Honor, this is what we call a fatigue fracture.

The Court: Where do you get that?

The Witness: After a number of years this metal gets tired, you know, from all the flexing.

The Court: Now, a fatigue crack starts at one instance, then works gradually, does it not?

The Witness: That is correct.

[773] The Court: And you can detect the signs of a fatigue crack by looking at the cracked surfaces, can't you?

The Witness: Yes.

The Court: You have heard of those clam-shell markings and all?

The Witness: Yes.

The Court: No evidence of that in this case?

The Witness: There was no evidence.

The Court: All right.

The Witness: I never saw it.

The Court: All right. Now, let's go back to the—I am asking you again if you can give me any idea of what you believe the sag was at the moment when that fracture occurred. And I want you to take into account that at least on the record in this case we have not the slightest evidence of a fatigue crack.

The Witness: Where did we get that information from?

The Court: There is no evidence of a fatigue crack in evidence in this case.

The Witness: Mr. Allen saw the crack, didn't he? The Court: Well, look, I don't think we are getting anyplace. I just wanted to ask you, and maybe you can't answer me, if you could tell me how much of a sag would be necessary to cause what is called a bending fracture in that [774] web at the moment of the fracture on December 24, and maybe you can't answer it and we won't pursue it.

The Witness: I will be perfectly honest, your Honor. I don't know. I have no idea.

The Court: All right. Then that is the end of that. It could well be greater. You would say, though, that the sag you detected on February 3 is not enough to cause the bending fracture, would you—

The Witness: No, not at all.

The Court: It is not enough; right? So if there was a bending fracture on December 24, there was more of a sag than you detected on February 3, wasn't there?

The Witness: I don't know.

The Court: Well, the sag you detected on February 3 was not enough to cause a bending fracture of that web. You have told me that; right?

The Witness: The bending, the sag that we found on February 3 was nothing.

The Court: Not enough to cause a bending fracture?

The Witness: Not at all.

The Court: And it follows, does it not, that if there was a bending fracture on December 24, some five weeks or so before, it was greater than what you saw on February 3, doesn't it follow?

[775] The Witness: This sounds awfully puzzling to me.

The Court: Because you don't believe there was a bending fracture, I guess.

The Witness: Not at all.

The Court: You don't. Well, all right. I don't know that we are—how many ships have you examined, or taken readings of where there has been a fracture of a web?

The Witness: Of large size diesels, this is the only one that I personally handled.

The Court: So how can you be certain that the fact of the fracture would affect that alignment? Do you get me?

The Witness: Would you repeat that, your Honor?

The Court: I thought you told Mr. Kritzalis or Mr. Kennedy, or both of them, that the fact of the fracture on December 24 wouldn't in and of itself affect the amount of sag.

The Witness: No, it wouldn't change it.

The Court: It wouldn't. Now, I just don't understand the basis for your being able to say that.

The Witness: Try a few more questions.

The Court: It wasn't a question. I just said I don't understand. What is the basis for you saying that? I mean, have you had experience? Have you

taken readings [776] before fractures and after fractures, anything like that?

The Witness: If the break, the crack, was caused by more of a sag on the day it happened, you would have found a damaged bedplate, that is the frame that the shaft runs in.

The Court: Wait a minute. Say that again.

The Witness: The bedplate, that is the foundation like, I mean, what the shaft runs in. You would have found damage on that. But there was no visible damage anyplace there. The formation,* if you want to call it that.

(Record read.)

The Court: All right. I've got that.

I think my question was a little different. I am going to ask you this again, and maybe you can answer it and maybe you can't, and if not, we won't pursue it. But how can you be certain that the fact of the fracture wouldn't in and of itself affect the alignment? In other words, I would think, Mr. Haugestad, that before that fracture there was a certain particular amount of stresses and strains and relationships of all these parts. Then you have the fracture, and the fracture relieves a certain amount of—a certain something of those stresses and strains, and so I would assume that the relationship of those parts was a little different after the fracture than before. Am I wrong?

The Witness: That is possible.

^{*} Should be "foundation" not "formation".

[777] The Court: And the relationship of the parts being a little different, the amount of sag would be a little different after the fracture than before; isn't that possible?

The Witness: That is possible. But then again we find a good alignment after the shaft is pulled together.

The Court: On February 3?

The Witness: Yes.

Redirect Examination by Mr. Kritzalis:

[778]

Q. Now I hand you Plaintiff's Exhibit 7-Q in evidence and I ask you whether anywhere on that photograph, or, where on that photograph one might optically observe shim material, if it is depicted on that photograph (handing). A. That might be the shim there (indicating). You see that joint?

Q. Would you draw an arrow pointing to the shim, in pen? A. Yes.

Mr. Kritzalis: Let the record reflect that the witness has drawn an arrow and written the word "shim" on Plaintiff's Exhibit 7-Q in evidence.

The Court: I don't get what—the shim is that edge I see? Is that the shim?

Mr. Kritzalis: Yes, your Honor.

The Court: Is it stuck in or what is it?

The Witness: It is located on two locating pins, plus the bolts go through it, the big bolts that you see there. Or studs, rather.

The Court: Which direction? Is it going up and [779] down or in and out or—

Q. Could you analogize it to a gasket, the shim material, or— A. The shim is made up from a few heavy ones and some very light ones down to four thousandths in order to adjust your bearing joints.

The Court: It is going up and down on this photograph; is that right?

The Witness: No, no; horizontal.

Q. Would it be like a gasket? A. Yes, you can compare it to a gasket.

The Court: I see. All right.

[782]

(Defendant's Exhibit F and G received in evidence.)

[783]

Q. What is your opinion, Mr. Haugestad, on the nature of the fracture depicted on those two photographs? A. Well, as far as I can see, obviously it is a fatigue crack and it opens up gradually and reaches the breaking point. So part of this is a mechanical break where you see the rough surface.

[784]

Mr. Kennedy: Which exhibit was the witness referring to?

The Court: Exhibits F and G.

[785] Mr. Kennedy: Both exhibits, your Honor? The Court: That's what he was shown. That's what I have done.

Now, I want to know, Mr. Haugestad, what is it that you call the rough surface? And I also want to know what you mean by mechanical break. And if you distinguish a fatigue crack from a mechanical break. Those are things I don't know. Although I referred to clam-shell marks, I didn't want to indicate to you I was an expert. I am not. I see some things on it that look like them.

.

Q. While the judge is holding Plaintiff's Exhibit G, would you respond to the judge's inquiry with relation to Plaintiff's Exhibit F, if you can (handing)? A. Check if we are holding the same way now.

The Court: I am holding mine with the hole up towards the top.

[786] The Witness: Well, your Honor, up on the right-hand side here, this portion is much smoother than on the opposite side (indicating). See the mountain range over here?

The Court: Yes.

The Witness: That is torn apart. That is mechanical failure. That's the difference.

The Court: What are the signs here of a fatigue crack, Mr. Haugestad?

The Witness: The smooth portion up on top to the right. This is probably where it started (indicating).

The Court: Well, now, you see those rounding marks, don't you? Sort of—

The Witness: A circle like?

The Court: Yes.
The Witness: Yes.

The Court: Do they have a significance?

The Witness: That I believe is the structure of the steel. I am not an expert in this. I have seen a few broken shafts and other broken engine parts.

The Court: All right. But you think that the smooth part indicates fatigue crack?

The Witness: Yes.

The Court: Then when you come to the very rough part over to the left, that would be the mechanical fracture. What do you mean by mechanical fracture, or mechanical break?

[787] The Witness: Torn apart.
The Court: More or less instantly?

The Witness: Yes.

The Court: All right. Now, how much of the surface would you say was involved in the fatigue crack?

The Witness: That I cannot answer.

Mr. Kritzalis: Did your Honor mean by that as shown on the photograph, or the entire area of the web? I may have misunderstood the exchange.

The Court: Well, I have a photograph which I think is the entire cross-section of the web. And

I think that Mr.—maybe you could take a look at my photograph, Exhibit G, and tell me how much of that surface was involved in the fatigue crack. Because I don't think your photograph has the whole surface.

The Witness: You have a little more here. You have the whole cross-section.

The Court: Yes, that's right.

The Witness: One-third of the section here is clearly a fatigue crack, this portion here (indicating).

The Court: Are you able to give an opinion as to the time involved in a fatigue crack?

The Witness: That is impossible, your Honor.

The Court: You don't know. All right.

[788] By Mr. Kritzalis:

Q. Mr. Haugestad, assuming that the October 11, 1967 alignment as is shown on Plaintiff's Exhibit No. 23 in evidence, and assuming the Hellenic Sailor was light, or, in a light condition on October 11, 1967, and assuming cargo was loaded after October 11, 1967 at various unstated ports, and assuming Plaintiff's Exhibits 36 and 39 in evidence show the February 3, 1968 alignment at Port Sudan with the vessel fully loaded, could deviation of alignment at the port of departure from the United States, or at any point in the voyage, have exceeded in sag the deviation shown on the October 11, 1967 reading?

Mr. Kennedy: Objection, your Honor. I don't believe my cross-examination covered the alignment reading upon the vessel's departure from New York.

Here is a question directed to a change of alignment, possible change of alignment from New York to Port Sudan.

The Court: Well, it may have been inspired by my question. I will overrule the objection.

Q. Do you want the question read back to you slowly, Mr. Haugestad? A. Yes, you had better.

(Question read.)

A. That is absolutely impossible.

[789]

Recross Examination by Mr. Kennedy:

- Q. Mr. Haugestad, isn't it true that bending over an extended period of time can cause a fatigue fracture? A. Yes, that is correct.
- Q. Referring to Defendant's Exhibit B, the photograph, have you ever seen this photograph before (handing)? A. No.
 - Q. Would you examine it for a moment, please.

The Court: What photograph is that?
Mr. Kennedy: Defendant's Exhibit B, your Honor.

Q. Are you in a position, sir, to tell me what kind of a fracture is exhibited in this photograph? A. From this photograph? No. It is too fuzzy.

The Court: May I see that? The Witness: Too fuzzy.

Q. Referring now to Defendant's Exhibit G, another photograph, and referring to—strike that—are there any areas reflected in that photograph where cutting away, or welding of some sort may have been done in the process of removing this section from the crankshaft? [790] A. Burning with a torch over in this corner—

Q. Referring to the upper right-hand corner? A. Yes.

Q. Now, referring to the upper, upper right-hand corner—upper, upper left-hand corner, do you find some evidence of burning away? A. It is hard to say. Could be, and on the other hand, it could not. I couldn't say.

Q. When you said that the photograph indicated that the metal had broken, at least in part as a result of a fatigue fracture, did you mean by that that it was necessarily fatigue over a long period of time? A. That could be two months, that could be two years. Nobody can tell.

Q. Could it have developed over a period of years? A. Yes.

Q. Would you assume that a crankshaft such as the one found on the Hellenic Sailor had a sag at main bearing No. 4 of 22 thousandths of an inch—I'm sorry, a hog of 22 thousandths of an inch at No. 4, a hog of 11 thousandths of an inch at No. 3, a sag of 16 thousandths of an inch at No. 2, could such a condition as reflected in the crankshaft cause the beginnings of what you would call a fatigue fracture?

Would it help if you saw a diagram? [791] A. Yes.

The Court: You mean the reading as of when, Mr. Kennedy?

Mr. Kennedy: The reading is not yet in evidence,

your Honor. I would ask that it be marked at this time.

The Court: All right, let's have that marked for identification.

(Defendant's Exhibit A-E marked for identification.)

[803]

Mr. Kennedy: I am offering it in evidence, your Honor.

The Court: And I take it you object on the grounds of relevancy?

Mr. Kritzalis: That is correct, your Honor.

The Court: But you don't object on the grounds it isn't a reading of the Hellenic Sailor; is that right?

Mr. Kritzalis: I do not object that it is a reading, most probably taken on the date that the document is dated. I don't know the circumstances on either side of this reading. The document speaks for itself and I have no objections to it being represented as having come from my files.

The Court: All right, received.

Mr. Kennedy: It was identified by Mr. Allen as such.

Mr. Kritzalis: Then you can put Mr. Allen's testimony in on that subject.

The Court: Received.

Mr. Kritzalis: Please note my objection.

The Court: Yes.

[804] By Mr. Kennedy:

Q. Mr. Haugestad, referring to the alignment as reflected in Defendant's Exhibit A-E in evidence, do you have an opinion as to whether this is a proper alignment (handing) for a ship such as the Hellenic Sailor? A. I don't like this one, no.

Q. You don't like that one? A. No. Even if it is still within tolerances.

The Court: I can't hear you.

Mr. Kennedy: "Even if it is still within tolerances"?

The Witness: Yes.

Q. Is there anything disturbing to you about this dogleg effect on the alignment reading? A. It is, yes. I believe where this was taken some bearing was just made at this time.

Q. I am not asking you that sir, at this time.

Mr. Kennedy: I move to strike. The Court: Strike it.

Q. Do you find any significance in the drafts which show that the vessel forward is 23 feet 5 inches, and aft 24 feet 2 inches? A. She is practically fully loaded.

Q. Is she on an even keel? A. Fair.

[805] Q. Fairly even keel? A. Yes.

Q. And would one expect to find the alignment of the ship under such draft conditions to be near the zero point?

A. Not necessarily near the zero point.

Q. Could the alignment as reflected in Defendant's Exhibit A-E in evidence begin, cause, or accentuate an existing fracture in a side crank web on the ship?

Mr. Kritzalis: I object to that question, your Honor. I don't understand the question.

The Court: Well, overruled.

A. Repeat that question, please.

(Question read.)

A. Well, I said I didn't like this reading here, but still it is within tolerances.

Q. Well, what about the dog-leg effect? Is that good? Is it desirable? A. Not desirable at all.

Q. Could the dog-leg effect cause a fracture in the crankshaft or cause an unusual stress in the crankshaft which might subsequently lead to a fracture? A. Any misalignment tends to speed up fatigue, beginning of fatigue.

Q. What you are doing, then, is reducing the life of [806] the shaft; is that what you are saying? A. Right. That is correct.

Mr. Kennedy: Your Honor, I offer two sheets marked for identification as Defendant's Exhibit V into evidence.

Mr. Kritzalis: I object to these, your Honor, on the grounds that at the time of his deposition Mr. Allen had trouble identifying these two documents.

The Court: What is the number of the exhibit?

Mr. Kritzalis: Exhibit V. Two sheets marked V for identification.

The Court: Well, if there is an objection for a lack of foundation, I think it is sustained, because there is certainly no foundation on the record. If there is something in Mr. Allen's deposition, why, that lays the foundation, you can cover it later.

Mr. Kennedy: Your Honor, would it help if I could produce documentation to show that the Hellenic Sailor was repaired at Genoa in 1960? That these documents were issued at Genoa in 1960 and that these were issued in Genoa in 1960, shortly after the Sun Shipyard letter was written concerning recommended web deflections?

The Court: I don't think that would be enough. I mean, all this is a typewritten sheet saying Hellenic Sailor on the top, and a bunch of figures. Now, when, who [807] and how it was developed I really can't say unless somebody will agree to it or testify about it.

Mr. Kennedy: May I ask the witness a hypothetical, your Honor, on the information contained in a document?

The Court: You can ask it subject to-

Mr. Kennedy: My proving that this is what I say it is.

The Court: But I won't consider it unless you get some connection. All right.

Q. Mr. Haugestad, would you assume a crankshaft such as the type found on the Hellenic Sailor when examined was found to have a 23 thousandths of an inch sag at No. 4 main bearing, a 62 thousandths of an inch sag at No. 3

main bearing and 86 thousandths of an inch at No. 2 main bearing. Do you have an opinion, or, do you have an opinion as to the—

Mr. Kennedy: Strike that.

Mr. Kritzalis: May I give the witness a pad, your

Honor?

The Court: Yes.

Q. Do you have an opinion as to whether this is a proper alignment for a vessel such as the Hellenic Sailor? A. Will you please repeat the figures?

[808] Q. At No. 4 main bearing, 23 thousandths of an inch sag. At No. 3 main bearing, 62 thousandths of an inch sag. At No. 2 main bearing, 86 thousandths of an inch sag.

Do you have an opinion as to whether this is a proper alignment? A. That is not a proper alignment.

- Q. It is excessive, isn't it? A. Excessive.
- Q. Very excessive? A. Yes.
- Q. It is true that the No. 2 crank is between the No. 2 main bearing and the No. 3 main bearing; is that correct?

 A. That is correct.
- Q. Could a sag of this extent in some way set up an excessive stress of the No. 2 crank? A. It is definitely setting up excessive stresses.
- Q. And could it begin, or cause to begin, a fracture which in time would ultimately lead to the failure of the No. 2 crank? A. Possibly.
 - Q. It is possible? A. Yes.

Arne Haugestad--for Plaintiff-Further Redirect

The Court: When you say No. 2 main crank—Mr. Kennedy: No. 2 crank, your Honor.

[809] The Court: No. 2 crank. Well, that's the No. 2 section.

Mr. Kennedy: The No. 2 section between the 2 and 3 main bearings. This is the crank section that fractured.

The Court: All right.

- Q. You used the expression "mechanical fracture." Would you tell me what a mechanical fracture is? A. Mechanical fracture, that's when you break a thing with force.
- Q. You mean after the web became weakened to the point where it could no longer withstand the stress— A. Then she gave, yes.
 - Q. -it finally parted? A. Yes. Tore apart.
 - Q. Tore apart.

Further Redirect Examination by Mr. Kritzalis:

Q. In the hypothetical that Mr. Kennedy gave you [810] referring to those figures that you jotted down before you, is your assumption based on the—was your answer based on the assumption that that condition would go uncorrected for an indefinite period of time with respect to the possible setting up of stresses which might result in a fracture on the rib? A. I am quite sure this situation was corrected right in Genoa.

Defendants' Motion to Dismiss Complaint

[822] Mr. Kennedy: Will you entertain a motion at this time, your Honor? Defendants move to dismiss plaintiff's complaint with cost on judgment of its counterclaim for the amount of general average deposits for the reason that plaintiff has failed to carry its burden of proof as to the exercise of due diligence before and at the beginning of this voyage in stages or otherwise to make the vessel in all respects seaworthy as to its crankshaft.

In the alternative, defendants move to dismiss the complaint as regards any alleged general average expenditures to the vessel after she arrived at Port Sudan.

Plaintiff has proved a peril that is a fractured crankshaft. Plaintiff has proved the existence of the general average statement. Plaintiff has not proved whether the items in that statement qualify as items of general average damage or expense. The general average statement is not competent to prove the character of the expenses. The statement is prima facie proof only of the expenditures and of the values and does not mean that the items appearing therein or the costs thereon are necessarily items of cost in the nature of general average.

The only competent proof in the record at this stage of the proceedings and from which this Court can make a determination as to which items are general average, or general [823] average damages or general average sacrifices can be found in the stipulations of facts, specifically those numbered 11 and 13, in which the parties agreed that the vessel required towage to Port Sudan. And the towage,

Defendants' Motion to Dismiss Complaint

of course, was in consequence of a fracture in the crank web at a time when the vessel was in the Red Sea.

The general average adjusters' allocation of subsequent costs and expenses are meaningless in themselves. While the parties did agree that the statement was a list of charges incurred by Hellenic as a result of the casualty, this does not mean that they are necessarily general average, or, for that matter, particular average losses. There is, as a matter of fact, convincing evidence in the present record and at the close of the plaintiff's case, that plaintiff lost any right it might have had in general average upon abandoning the feasible and reasonable temporary strongback repairs undertaken by Allen in favor of permanent, or, if you will, the intended permanent repairs.

The Court: Mr. Kennedy, I think the way the present record is, I would not grant motions to dismiss. You have really started on your case. As far as the basic question of unseaworthiness and diligence. And—

Mr. Kennedy: This was pursuant to the Court's request.

[824] The Court: That's right. And I think here that the best way to handle this case is to have everybody put on his proof. Some witnesses come from great distances, and I think the whole proof should go in and then I should make my decision. I don't think it is very economical to come here and then have part of the proof and then grant a motion,

Colloquy

deal with motions, and then if there is some kind of a reversal on appeal, then bring the witnesses back from foreign countries. I think we had better go ahead. So I am going to deny the motions.

Mr. Kennedy: Thank you, your Honor.

Your Honor, pursuant to your suggestion, defendants have prepared more or less in brief form, a synopsis of Mr. Allen's testimony. We have also prepared, and again also pursuant to your suggestion, a list of the portions of the examination before trial which will be offered by the defendant.

At t is time, we offer the original depositions properly marked, we offer the synopsis of Allen's testimony, and we offer that list of the portions of examination before trial which are to be offered by the defendant.

We offer also at this time for plaintiff's use a listing of those portions of the Allen record which defendant is offering in evidence.

[825] The Court: Let me be clear. Are you offering the whole of Allen's deposition or only excerpts from it?

Mr. Kennedy: We are offering excerpts as are reflected in the listing we have given your Honor. We are offering also—

The Court: Well, let's do this. Let's have the Allen deposition marked as the next defendant's exhibit for identification, and that will be in volumes A-F1, 2 and so forth. May I see the deposition?

.

Colloquy

[826]

(Defendant's Exhibit A-F-2, 3, 4, and 5 received in evidence.)

[828]

Mr. Kennedy: Your Honor, I am a little confused by the procedure. It was my impression that Mr. Kritzalis told the Court this morning that he would not offer Mr. Allen in person but rather he would offer Mr. Allen's testimony.

The Court: And he rested without doing so. That's where we stand.

Mr. Kennedy: So Allen is offered on behalf of the defendant and Mr. Kritzalis has the opportunity to offer, in effect, cross examination.

The Court: Of course he does. All right.

[830]

The Court: Now, do you have any other proof in your case?

Mr. Kennedy: Your Honor, defendants at this time offer a list of the portions of the examination before trial of Chief Evangelou, as well as a statement entitled, "Notes of Evangelou's Testimony for Use by Defendants' Statement." * * *

[835]

The Court: After reading through the parts of the Allen deposition which Mr. Kennedy has submitted, I want to renew my comment about making

Colloquy

sure that the exhibits are tied in with those deposition exhibits. A couple of things come to my mind on that subject and related subjects.

First of all, I want to know definitely which of the documents referred to in the course of the deposition testimony are in evidence or simply are being referred to without being in evidence. And at this point I obviously don't fully know your intention on that. Let me just go ahead, then I will get your responses.

Secondly, I believe during the course of this trial some things were taken subject to connection. I think that exhibit, the Sun Shipbuilding document of 1960 containing the recommended web deflection readings, if you recall the colloquy at the time that was offered, I overruled Mr. Kritzalis' objection to the extent of admitting it simply to [836] show the existence of it as a Sun Shipbuilding document. I think I said at that time that I would have to have further foundation if I was going to consider it as something having been received by Hellenic Lines. Do you recall that?

Now, I would like to have that question buttoned down, and I don't see anything in the designated portions of the Allen deposition which lay the kind of foundation I was speaking of.

Mr. Kennedy: May I address myself to that particular point?

The Court: Yes, but let me try to complete my list of questions.

Secondly, this is getting into another area, Mr. Kennedy, but in connection with your hypothetical question to—is it Mr. Bates?—you referred, of course, to a series of readings, and if I recall, all of those readings were not in evidence at the time and I took the hypothetical question subject to having you put in the factual basis, or complete the factual basis at a later time. Then I think at an earlier occasion you had started to introduce a whole group of documents, and I asked if you were going to introduce a series of readings to indicate some kind of a historical trend, I asked that you do it in a chart form so it would be intelligible to me.

[837] Those, thinking about these matters last night, those were some open questions. I just don't want to have the record closed and have things that were admitted subject to connection not connected, and possibly just have us overlook things like that.

All right. Does anybody want to comment now on those questions?

Mr. Kennedy: Your Honor, on the subject of Sun Doxford recommended web deflections—

The Court: What exhibit is that, Mr. Kennedy? Mr. Kennedy: That is Exhibit K.

The Court: Yes.

Mr. Kennedy: I would say at the outset that when the document was offered, your Honor might recall that there was an objection to it—when the document was offered initially, and this was at the time when I was cross-examining Mr. Smith of Sun Doxford, Sun Shipbuilding, there was an objection to

the document and it was admitted subject to connection. At the same time I pointed out to your Honor that the document had been marked at an examination before trial of Mr. Allen, and that Mr. Kritzalis would not permit me to examine Mr. Allen concerning the contents of the document. There was an extensive colloquy in the record as to what took place, Mr. Kritzalis's position and my position. [838] Your Honor thereupon commented—

The Court: Is that in the fourth volume toward the end?

Mr. Kennedy: It should be in the fourth volume, that is correct. And at that time—

The Court: All right. Let's get that. Mr. Kritzalis: Page 606, Your Honor.

The Court: All right.

Mr. Kennedy: Before we get into the colloquy, your Honor, at that time you indicated that I would have ample opportunity to review it with Allen. Mr. Kritzalis represented to this Court last Thursday that he would bring in Mr. Allen and he would appear live. Yesterday he indicated that he was prepared not to rely upon the testimony of Mr. Allen. I specifically did not refer to the Sun Doxford readings, or did not expect to use the deposition to get a connection to the reading because I had expected that Mr. Allen would be in the courtroom, I would be able to show him the document and he would identify it for us.

I can tell you this, your Honor, the document came from the plaintiff's file. There is no doubt about that, and I think Mr. Kritzalis will concede it.

Mr. Kritzalis: I stipulate that.

The Court: All right.

[839] Mr. Kennedy: And I was prepared to examine Mr. Allen in connection with it gnificance for this reason: The letter is dated 1960, September. The Genoa repairs took place in 1972, and Mr. Allen went over to Genoa.

The Court: 1970?

Mr. Kennedy: I'm sorry. The repairs took place in Genoa that same year.

The Court: 1960?

Mr. Kennedy: '60. And I intended to question Mr. Allen first concerning the document to learn, a) the circumstances under which it came into their possession. It is my contention that the document by itself just as it is now in the possession of the plaintiff does show recommended web deflections for the Hellenic Sailor. If there is any other explanation to be drawn from the document other than what it purports to be, it seems to me it is plaintiff's responsibility to come forward and tell the Court what it is, if it indeed is not that which it purports to be.

The Court: Well, I think it obviously has some significance, whether it came to the attention of Hellenic Lines or didn't, and I think that the stipulation that this document was derived from the files of Hellenic lines pretty well settles that question. I will hear from Mr. Kritzalis, but it would seem to me that if there is a stipulation that [840] this document came from the files of Hellenic Lines, it shows that Hellenic Lines received it and although that is addressed from Sun Shipbuilding to the American

Bureau of Shipping, obviously a copy went to Hellenic Lines.

Mr. Kritzalis: If I may, your Honor.
The Court: Is there any dispute on that?

Mr. Kritzalis: The extent of my stipulation, your Honor, is that the document came from Hellenic Lines' files, engineering files. That's all I will stipulate to. I don't know how it got there. My position was clear at the time of the fourth day of Mr. Allen's deposition testimony. Mr. Kennedy was on notice at that time what my position was, it is not something that I sprung on him at the time of trial. I, in due course when I am afforded the opportunity to put forth to your Honor my objections on those portions of the record of the Allen deposition designated by Mr. Kennedy, I will renew that objection that I had which was overruled subject to a later foundation by Mr. Kennedy with respect to that document. The fact that Mr. Allen has not been brought in by the plaintiff in this case, of course, doesn't mean to say that Mr. Kennedy himself isn't free to bring Mr. Allen in as a witness for the defendant to explain that letter and lay the foundation for it. I can stipulate nothing other than the fact that the letter, that exhibit, a copy, as you see it, [841] was from the engineering files of Hellenic Lines.

The Court: Well, I take it you talked to Mr. Allen about this document.

Mr. Kritzalis: I did not, your Honor.

The Court: You did not. All right. Well, to me the document is a very important document, and the

Colloguy

subject it speaks of is very important because as we know by now thoroughly it was a web which cracked and the subject of web deflection readings, whether they should have been taken or need not have been taken, is crucial to this case. And so any document which purports to set up recommendations for web deflection is important.

Now, if Mr. Kritzalis—well, obviously it is up to him whether he wants to call Mr. Allen and he chose not to do so. I think we all expected you to do so, but you were certainly at liberty to make your decision yesterday. Mr. Allen is within subpoena range, is he not?

Mr. Kennedy: I believe so. The Court: Where is he? Mr. Kritzalis: Brooklyn.

The Court: All right. So if you feel you have to serve him with a subpoena, Mr. Kennedy, you can do it. My curiosity is such about the case that I guess I would like to have the record not quite as naked on the subject of [842] Exhibit K as it is right now. But my curiosity doesn't determine what the lawyers should do. I think since Mr. Kritzalis decided not to call Mr. Allen, then that's within his prerogative. The question of whether you want to call Mr. Allen is entirely up to you. For your guidance—

Mr. Kennedy, I am addressing, and of course, Mr. Toy.

The way the record stands now, I think that I am justified in drawing an inference that the—well,

let's start it this way: I don't think it is terribly difficult. At the time of the Allen deposition—let me go back.

When did this document first appear?

Mr. Kennedy: It appeared during the course—it appeared to me at any rate, during the course of my examination of the plaintiff's records.

The Court: When was that?

Mr. Kennedy: This was prior to the Allen examination.

The Court: About how much prior?

Mr. Kennedy: Maybe two or three months, possibly.

The Court: All right. Well, anyway, it was well into the litigation, sometime in 1973.

Mr. Kritzalis: March of 1973.

The Court: All right. March of 1973. It is now stipulated that at that time it was derived from the records [843] of Hellenic Lines. The document is dated September 13, 1960. I think I would be justified in drawing an inference that Sun Shipbuilding, or the American Bureau of Shipping, didn't wait until 1973 to send it to Hellenic Lines. I think I would be justified in drawing an inference that the document went to Hellenic Lines at or about the time it was d = d, and I will do so.

Mr. Kennedy: Your Honor, may we have an opportunity to look at the Hellenic Lines folder from which the exhibit came?

The Court: Surely. That covers Exhibit K. Now, how about these numerous readings?

Mr. Kennedy: Your Honor, I have a document which has been pre-marked as Defendant's Exhibit A-L for identification. It is a recapitulation of the information given to Mr. Bates. It refers to the main crank web deflections in September of 1962 and then the several alignment readings taken through '62, '63, '64, '66 and '67.

The Court: Does it have dates, drafts-

Mr. Kennedy: It has dates, drafts, it has main bearing positions. Plus indicating a hog and the sag, indicating a minus.

The Court: And these were derived from records from Hellenic's files?

[844] Mr. Kennedy: These are Hellenic Lines' documents, some of them are in evidence and others are to be offered in evidence.

The Court: And these are all the alignment readings that you are going to rely on; is that right?

Mr. Kennedy: All of the alignment readings that I relied upon in my hypothetical to Mr. Bates.

[846]

Mr. Kennedy: This refers specifically to the hypothetical to Mr. Bates.

The Court: All right, and it has most of them, I would assume. All right. I will receive Exhibit A-L in evidence subject to correction.

Mr. Kennedy: All right.

(Defendant's Exhibit A-L received in evidence.)

[852]

Mr. Kennedy: Well, I would agree that Mr. Kritzalis is permitted to offer portions of the Allen deposition as part of his rebuttal.

The Court: All right.

Mr. Kennedy: I don't agree that he would be permitted to offer it in connection with the defendant's case. That's [853] my point.

The Court: What differences does it make? I am going to hear the case all the way through, and I am really not going to end up so concerned about who offered what as what evidence has gotten into the record at any point. So I don't quite understand. To me it is hair-splitting. Now, I would obviously like to have in one swoop all the portions of the deposition that Mr. Kritzalis wants me to consider, and I don't want to have it divided between a 32-A-4 submission and a rebuttal submission. I assume that Mr. Kritzalis will give me one document with his designations of the Allen deposition and the Evangelou deposition. And he said he can do that probably this afternoon, so we will leave it at that.

Now, I think we ought to role* on objections right now.

[855]

Mr. Kennedy: Your Honor, there was a discussion concerning the Exhibit K earlier, that's the Sun Doxford reading. I asked for the opportunity to examine plaintiff's file, its main engine crankshaft file No. 49. I wish the record to show that the ex-

^{*} Should be "rule."

Colloguy

hibit in question, or a copy of the exhibit in question, is found between an invoice of Golten received by Hellenic Lines of June 30, 1960 and a carbon original of a letter received by Hellenic Lines, which letter is dated October 25, 1960.

The Court: Is that correct, Mr. Kritzalis?

Mr. Kritzalis: It is correct to say-

Mr. Kennedy: I have one correction, it is October 3, 1960, the second letter.

Mr. Kritzalis: It is correct to say that the documents in Hellenic's file 49 with respect to the main engine crankshaft are in chronological order.

The Court: Well, no, that isn't really the question. [856] Mr. Kritzalis: And that the sequence as stated by Mr. Kennedy on the record is correct.

The Court: All right, fine.

[880]

Mr. Kritzalis: Your Honor, at page 341 of the Allen deposition, which is found in the third volume, actually it is page 338, your Honor, at page 338 and the pages following the questions on direct by Mr. Kennedy at the time of the deposition pertained to a survey reported dated September 11, 1968 prepared by a representative of an entity known as George Spark & Company. I object to the entire line of questioning pertaining to that survey report on the grounds that if offered—if the survey report is offered for the truth of the statements contained therein, it is hearsay. That the author—

The Court: Look. Let me just cut this short. I don't think you can object to the whole line of questioning. There were questions of different types asked about parts of that report. For instance, things were quoted from that report and then the witness was asked if he agreed with that. So that kind of questioning is on a different basis from maybe some other kind of questioning. So you had better go through and be specific as to what you are objecting to and why. All right?

[881] Mr. Kennedy: Your Honor, the report is in evidence in this case. And it was offered by the plaintiffs as part of—

The Court: What is the number?

Mr. Kennedy: Plaintiff's Exhibit 31. It is in the general average—

The Court: I guess I haven't read Exhibit 31.

Mr. Kennedy: Reports of survey at Bombay. I am holding the general average statement, your Honor.

The Court: Can I see Exhibit 31?

Mr. Kritzalis: Sir, to the extent that Plaintiff's Exhibit 31 is a statement of general and particular average there are documents in there which pertain to the particular average nature of the claim, to wit, the shipowner's claim against hull underwriters, and documents that pertain to the shipowner's claim against cargo for general average. And I concede that a reproduction of the original survey can be found in those pages and that brings me to my next objection that the proponent, or author of the sur-

vey report, had an adverse interest to the plaintiff shipowner in this case.

Mr. Kennedy: Your Honor, the plaintiff cannot get away from the fact that they offered the document. I didn't offer it.

The Court: Well, what you are now saying, Mr. [882] Kritzalis, is that this survey report of September 11, 1968 was not intended to be offered to prove the facts stated therein; is that right?

Mr. Kritzalis: Correct, your Honor. The Court: It is just offered as—

Mr. Kritzalis: That document, Plaintiff's Exhibit 31, contains many reproductions—reproductions of many documents.

The Court: How am I supposed to know? Here's a long document, how much of this is being offered for proof of the facts and how much is being offered for other purposes? I think you had better—

Mr. Kritzalis: The pages stipulated to in the parties' stipulation, and I believe the number was—the number of the stipulation was 19, so that it is clear what stipulation 19 was intended to cover, and that was to avoid the necessity of having the adjuster trot in before your Honor—

The Court: Look, Mr. Kritzalis, you offered the whole document without qualification. And if I picked up this document I would be perfectly authorized under the state of the record before this moment, at least, to take it for any and all purposes, information and all.

Mr. Kritzalis: I will withdraw the objection, [883] your Honor.

Colloguy

The Court: All right. Now, it doesn't mean you can't correct the offer, but all I am saying is if you want to make it clear to me that certain things in here are offered for a limited purpose, or not intended to be offered or anything like that, just please do it.

Mr. Kritzalis: Yes, sir.

The Court: And until then it is in for all purposes, but it doesn't mean you can't retrace your steps to that extent. Now, I don't think that the questioning about the report of Allen, I don't think it is so complicated.

Now, let's just go through step by step. Now, specifically what questions and answers do you object to?

Mr. Kritzalis: Question at page 342, and I am sorry I don't have the page of the report where—

The Court: I think we can deal with it. That's all right. What he is doing here is the kind of thing I referred to earlier. He quotes from Mr. Potts' report and for instance, back on 341, and says, Mr. Potts in his report states one bolt was found broken in the way of No. 3 main bearing girder. Do you recall whether this was so? And he answers, yes.

Now, that kind of question is not just merely a reading of the Potts report, it is asking him whether this is [884] true. And this is a man who was there. So I would overrule the objection. That's the same kind of thing—

Mr. Kritzalis: I will withdraw the entire objection, your Honor, with the comment to your Honor pertinent to Plaintiff's Exhibit 31 that that particular report is in, it was in there with respect to the particular average portion of the claim.

The Court: Really I wouldn't expect to get my facts in this case from the Potts report.

Mr. Kritzalis: All right.

The Court: So I will consider that that Potts report is not in Exhibit 31 as just for any and all information to the Court.

Mr. Kennedy: My difficulty, though, your Honor, with plaintiff's change in its offer, is that it is changing its offer of proof after it rested. The G.A. statement went in and there was nothing—Mr. Kritzalis examined Mr. Carlson and he kept referring to a particular average and a general average statement. And frankly I expect that Mr. Kritzalis would review with Mr. Carlson what this entire document was all about, for the purpose of offering—for the purpose of making the distinction and offering for certain purposes only. He didn't do that and he rested.

The Court: Haven't you ever done something at a [885] trial where you wanted to change your mind? Sure.

Mr. Kennedy: It has happened.

The Court: I have, too. Now, there is no jury here, there is nothing to erase from anybody's mind. I haven't read the Potts report so there is no harm done. If it aniects proof that you want to adduce,

you wanted to call an additional witness or something, or you wanted to— You've got an opportunity to adjust yourself.

Mr. Kennedy: Thank you, your Honor.

The Court: I don't really think it does present a problem. All right. What other objections.

Mr. Kritzalis: At page 358, your Honor, reference was made to a document dated April 15, 1970 in questioning the witness, and my objection is subsumed in those questions and answers designated on that page. That document was never marked for identification purposes and if your Honor were to need, as I believe he will, these exhibits, in other words, when we recess to give them to you so that Allen's—the questions and answers on Allen's deposition testimony might make some sense, I would assume your Honor would want that document.

Mr. Kennedy: Your Honor, I would like to address myself to that objection. The document in question that I referred to is a letter produced by Hellenic Lines and I [886] believe it was a Potts letter; is that right, Mr. Kritzalis?

The Court: That's right, it must have been. The whole questioning is about comments by Potts.

Mr. Kennedy: Now, the Potts letter was not marked at the deposition.

The Court: Is it one of the things you have just marked?

Mr. Kennedy: No. It was never marked and it is not in evidence. I have not marked it. I have a copy of it here.

Mr. Kritzalis: My only suggestion is if your Honor feels he needs it, then we ought to have it marked at least for identification purposes right now.

Mr. Kennedy: I have no intention of offering the letter. I referred Mr. Allen to certain notations on the letter. I am questioning him concerning those notations.

The Court: I don't think that, I mean after you get into it—

Mr. Kennedy: I asked him at page 358-

The Court: Excuse me. After you get into it you quote so much. You know, it is a little cryptic, but I think the point is made. On the other hand, why isn't the letter in evidence? It is being questioned about.

Mr. Kennedy: I was offering it to establish, if [887] I could—

The Court: Where is the letter?

Mr. Kennedy: I have it. Would your Honor like the letter?

The Court: Yes.

Mr. Kennedy: I was offering it to establish essentially that a bearing which was running in a 46 thousandths of an inch sag would not necessarily show evidence of wear or wiping. And Mr. Allen—

The Court: Where did this letter come from?

Mr. Kennedy: This came from the plaintiff's files.

Mr. Kritzalis: Actually I believe it came from the adjuster's file. But it is not inconceivable that there is another copy around.

The Court: I think somebody might be glad at some point to have the letter in evidence simply to

show the context of the questioning. And that's the only reason I would receive it. Nobody is offering it for substance, but let's just take it so there is no—so that the testimony is not later cryptic or something like that.

All right. Who wants to offer that?

Mr. Kennedy: I will offer it, your Honor, with that reservation.

The Court: All right.: What exhibit number will [888] that be?

Mr. Kennedy: Defendant's Exhibit A-N.

The Court: All right. Received.

(Defendant's Exhibit A-N received in evidence.)

The Court: All right. What's next, Mr. Kritzalis? Mr. Kritzalis: Sir, at page 376 and following, questions and answers are found with respect to a letter dated June 12, 1969 on the letterhead of Francis A. Martin and Ottoway, Inc., addressed to plaintiff Hellenic Lines, and my only comment, objection, if you will, is the same as with respect to the Potts report, to wit, it will be found in the pages preceding the statement of charges and expenses in Plaintiff's Exhibit 31, and if your Honor wishes, he feels, to read it, I have no objection to his reading it so long as he knows that that, too, is part of the particular average. It is found in Plaintiff's Exhibit 31 at page 49, 50, and 41.

The Court: Well, I am not clear. Are you objecting to the testimony on 377?

[•] Should be "51" not "41."

Mr. Kennedy: He wants me to offer the letter that I referred to in asking the witness the question.

Mr. Kritzalis: Neither, your Honor. I would like simply for your Honor to be aware of the fact that the same thing, the same issue as we raised with respect to the Potts report pertains as with respect—

[889] The Court: Well, wait a minute. When you say the same issue, are you suggesting that the June 12, 1969 letter which is contained in Plaintiff's Exhibit 31 is not in fact offered for all purposes, it is simply part of the—

Mr. Kritzalis: Yes, sir. Same as with the original Potts survey of September 11, 1969.

The Court: All right. Well, do you have any comment to that? Is there any reason why the June 12, 1969 letter should be in the case for—

Mr. Kennedy: For all purposes? The Court: —for all purposes?

Mr. Kennedy: If it has been offered by the plaintiff, I have no objection to it having been offered.

The Court: No, it isn't. It is not. He is trying to in effect qualify and say that this letter, like the Potts report, although in Exhibit No. 31, is just—is not to be used by the Court to prove the facts stated therein. I guess that's what we are saying.

Mr. Kennedy: No, your Honor. I would object to its being offered. It is a letter prepared by an expert hired by the plaintiff at a time when he was interested in proving the cause of the fracture, so he could be paid from the insurance company.

Colloguy

The Court: So you don't want to use it?

[890] Mr. Kennedy: No, I don't think it should be used.

The Court: All right, then we are all in agreement.

[891]

Mr. Kritzalis: Your Honor has already ruled on my [892] objections pertaining to the documents covered at pages 606 through 609 and that would be the Sun Shipyard letter which has been put in evidence as Defendant's Exhibit K.

The Court: All right. That's all taken care of. Are there any other objections to the testimony? Mr. Kritzalis: At page 612, your Honor, my last objection, I move to strike the question and answer found at lines 12 through 15.

The Court: It just doesn't make any sense to me. Mr. Kritzalis: That's why I move to strike it, your Honor.

Mr. Kennedy: Your Honor, it has to be read in the context in which it was asked. I was referring to the Cummings letter which had been marked as Defendant's Exhibit 67.

The Court: Is that in evidence?

Mr. Kennedy: No, it is not, your Honor. I have a copy of the document here, it is a letter dated June 12, 1969. I referred the witness to a statement made in the letter and I referred the witness to the range of flexibility referred to in the letter, specifically 16 thousandths of an inch to 42 thousandths of an inch

deflection at No. 3 bearing. And I asked the witness on page 611, line 19, "Does the range of flexibility of 16 thousandths to 42 thousandths of an inch [893] indicate also a certain flexibility in the crankshaft?" And we continued discussing this particular range. And when I got into the question of whether it was desirable, on page—

The Court: I see. I can read. But he says—you have a question, "No, I have asked you if it is desirable and your answer is that zero is desirable." Answer, "Zero is desirable." Question, "Right?" Answer, "Yes. And any deviation from zero, whether it is only 2 thousandths of an inch, is acceptable, not any deviation to the alignments as shown in this."

Mr. Kennedy: Referring to the exhibit.

The Court: I don't understand the answer.

Mr. Kennedy: Your Honor, I showed the-

The Court: Well, what's the point?

Mr. Kennedy: The point is he admitted-

The Court: This is so, you know-

Mr. Kennedy: The point is that Mr. Allen admitted that a deviation from 16 thousandths to 42 thousandths of an inch flexibility in a crankshaft was not acceptable.

The Court: Did he? Where?

Mr. Kennedy: I began on page 11° with reference to Defendant's Exhibit 67, and that's the Cummings letter. "You testified that you agreed with the comments of Mr. Cummings regarding the flexibility of

Should be page 611.

the hull and the engine bedplate. [894] Do you recall that testimony?" Answer, "Yes."

The letter, as I recall, reported a range of 16 thousandths inches to—

The Court: I can read, yes. All right.

Mr. Kennedy: That's what he is referring to.

The Court: May I see the letter, please?

Mr. Kennedy: Yes.

The Court: I think we will have to take our luncheon break now. But you see what you do, you incorporate into your question a paragraph in the letter, then he says yes, I agree with that. So we have got to get the letter out. Then maybe we can understand this a little.

Have you got it now?

Mr. Kennedy: Yes. It is the paragraph on page 22 beginning, "The survey," showing a set of readings, and then ending up with a comment—

The Court: Here's a letter which recaps certain readings, then I guess it makes a mistake on the November date, it should be October 11. Anyway, that's what we understand. Then it simply says that this shows that at the No. 3 main bearing that the sag for three separate conditions of loading ranges from 16 thousandths to 42 thousandths, clearly indicating the flexibility of the hull and the engine bedplate. He says, "I agree with that." Now, I just don't see this is [895] worth a lot of time, but on page 612 the answer at line 13 doesn't make any sense. I think the reporter left something out.

Mr. Kennedy: No, I don't-

The Court: And if he didn't, it doesn't—it says "any deviation from zero, whether it is only 2 thousandths of an inch, is acceptable." Now, he is certainly not—he didn't mean to say any deviation in the wide world from zero is acceptable. And probably the word "whether" is mistranscribed or something like that.

Mr. Kennedy: But the sentence that follows, though, "not any deviation is shown in this"—I am quoting—

The Court: I get your point.

Mr. Kennedy: He is referring to the Cummings range of 16 thousandths of an inch to 42 thousandths of an inch. That's the thing he is referring to. He's got the document in front of him. And I distinctly remember his reaction because if I could have taken a picture, I would have.

Mr. Kritzalis: Well, your Honor, I may-

The Court: You know, this is now an important point. If you are going to say that he commented on a range of 16 thousandths to 42 thousandths as being unacceptable, it becomes important. I simply didn't understand it. We've got to break for lunch now.

[896] Mr. Kennedy: I offer it for that purpose. Your Honor reminded me yesterday that I asked one too many questions.

Mr. Kritzalis: The defendants have made a point of it in their synopsis which is why I moved to strike it on the grounds that there is no question to be answered.

The Court: Oh, that isn't any-

Mr. Kennedy: That's Mr. Allen. This was their witness.

Mr. Kritzalis: He keeps saying Mr. Allen was my witness. I refer the Court to my preface at the start of his testimony.

The Court: I think I will leave it in. We will have to figure out how to interpret this, but I will certainly—can we finish with the Allen deposition?

Mr. Kritzalis: I have finished, your Honor.

The Court: Do you have any objections to the Evangelou deposition?

Mr. Kritzalis: No, your Honor.

[898]

The Court: I think this letter of Mr. Cummings to Hellenic Lines, June 12, 1969, ought to be received to make that portion of the Allen testimony where you are dealing with, at the least intelligible.

Mr. Kennedy: I offer it for that purpose, your Honor.

The Court: All right. That will be received as the next defendant's exhibit.

(Defendant's Exhibit A-O received in evidence.)

[902]

Mr. Kennedy: I would like to call Mr. Bates for the purpose of clarifying Exhibit V.

The Court: All right.

Mr. Kennedy: Your Honor, we have copies of Defendant's Exhibit V. There are some other figures written on them. We would ask you, we propose to give you the two copies so you can follow the testimony, but ask you to ignore [903] anything that is handwritten on the documents.

The Court: All right.

ERIC SWIRE BATES, previously sworn, was re-called as a witness and testified further as follows:

Direct Examination by Mr. Kennedy:

Q. Mr. Bates, I hand you two documents which are in evidence as Defendant's Exhibit V. I refer you specifically to the first document, that is, one bearing a date 1/11/1960 (handing).

Referring to the first set of figures in the schematic that appears at the top of the exhibit, can you tell us exactly what the schematic and what these figures are? A. It is a wire alignment diagram—

The Court: I would write on that exhibit and indicate everything that should be indicated.

The Witness: Well, it is pretty easy to translate, your Honor, with the use of a dictionary.

The Court: All right.

A. The top one is a wire alignment diagram and that's what the Italian is saying. It is measurements with tight wire of the crankshaft, or on the crank, related to the crank-

shaft. Then it gives the date. The diagram you see [904] below it is the conventional type of diagram that we have been looking at through the series of this trial.

The Court: What are the measurements in?
The Witness: And you can convert the figures—
The Court: They are in what, millimeters?
The Witness: They are in millimeters, 0.69 of a millimeter. And the conversion of that to the position 4, and shall I write on here —.027 of an inch?
The Court: Yes, please.

Q. Mr. Bates, would you use a red pen? I think it would be easier.

The Court: 27 thousandths?

The Witness: Yes, sir.

The Court: .027. All right.

The Witness: Minus .027. That is sag.

The Court: All right.

The Witness: And 1.60 millimeters, at position 3, is minus .062 thousandths, or 62 thousandths. At position 2 you've got 2.18 millimeters and that is minus .086 of an inch, or 86 thousandths, and you will come to zero again.

The diagram immediately below it are the actual— The Court: Now, at position 2 it is .086; is that right?

The Witness: Yes, sir.

[905] The Court: All right.

The Witness: The combination of figures and lines immediately below it are the recordings for the

various readings taken to determine the alignment by wire, including wire sag factors and including the corrections to bring it to the true horizontal. And they are all a composite. I can explain each individual figure if you want.

The Court: As far as I am concerned, I don't need an explanation of all that.

The Witness: Then below that, sir, we have where you can see 1.92, and a space, and then the line is drawn in zero, you can see that these apply in effect to positions 5, 4, 3, 2 and 1 as you go across the page from left to right.

The Court: Yes, I see that.

The Witness: And those are the calculations which bring numbers 5 and 1 to zero and automatically give you the resultant figure in positions 4, 3 and 2. And they match with the diagram with which this interrogation started at the top.

The Court: All right, fine.

The Witness: So if I have the information I will write thousandths in here. Below that it says deflection relevant deflections, or related deflections, and they are quite obviously crank web deflections because you now have 4, [906] 3, 2, 1, those are the cranks in between the main webs, and you have the positions as shown, as developed during my own testimony, of the readings of the crank web deflection again. If we take No. 4—

The Court: Now, wait. You've got five bearings but you've only got five cranks.

Mr. Kennedy: Four cranks.

The Witness: Four cranks.

The Court: Four cranks. And those cranks are basically the big webs?

The Witness: Yes.

The Court: And the-

Mr. Kennedy: The cranks are in between the bearings.

The Court: I can never remember the name, what is the arm in between the big webs? The arm that reaches down from the piston?

Mr. Kennedy: Connecting rod?

The Witness: Yes, sir, that is a connecting rod.

The Court: Is the center connecting rod-

The Witness: Yes, this is the center connecting rod and the center pair of crank webs, the main crank webs.

The Court: All right. So you've got four cranks. The Witness: Yes. Those are labeled 4, 3, 2 and 1. [907] The Court: Yes, all right.

The Witness: Then in each individual crank—then each individual crank is taken in turn and the measurement is taken at 90 degrees, then at 180 degrees, and then at 270 degrees. And you will recall the explanation which was developed, you start with whatever reading—

The Court: Yes. I just want to get an explanation of these figures.

So all we have done, the significant one is the reading at the bottom, this too was developed in testimony.

Where it says plus 1 or 2, that is in what measurement?

The Witness: In hundredths of a millimeter. So that's 1.02.

The Court: And translated into thousandths of an inch, it is what?

The Witness: Plus .040. 40 thousandths.

Shall I write that in now?

The Court: Yes. You had better write in something that indicates these are web deflection readings for four cranks.

The Witness: Would it not be sufficient just to write crank web deflections?

The Court: Anything you want to write.

[908] The Witness: May I have your permission to write wire alignment diagram at the top?

The Court: I thought you were.

The Witness: So if I take No. 3 now and take the position at 180 degrees, we have .19 of a millimeter, which is plus .007, of an inch, or 7 thousandths; at position 2, 1.00 millimeters, or plus .039, which is 39 thousandths; and in position 1, plus 1.58 millimeters, which is plus .062 of an inch, or 62 thousandths.

The Court: All right.

The Witness: On the next sheet we have virtually the same, only the person who drew it up has taken some shortcuts. He hasn't put in quite as much information. We start with the calculation—we start off here at the top with the recording of various readings taken to determine the alignment by wire, including the wire sag factors, which are shown in the diagram, and the series of figures immediately

below it are the calculations for the correction to the true horizontal. Then we have a line drawn right across the page and then immedately below that line we have the wire alignment diagram which is now shown with figures in a hog position, and I would convert the position 4, which is .62, to read plus .024 of an inch, or 24 thousandths hog. We then have position 3, 0.27 millimeters is plus .011, or 11 thousandths [909] hog; position 2 is 0.04 of a millimeter, which is plus .001 to the nearest figure, or 1 thousandth of an inch hog.

And the figures immediately below it are the calculations which were used to bring Nos. 5 and 1 to zero, and the summations match up exactly with the figures put on the diagram, that is, position 4, plus .62 millimeters; position 3, plus .28 millimeters; position 2, plus—and there is a blank which is zero, .04, and zero for position 1.

Then there is a line drawn right across and-

The Court: May I interrupt you? Can you tell, do we know why the differences between the first sheet and the second sheet; the first sheet wire alignments show—

The Witness: Yes, it is written in Italian at the bottom. I can only use a dictionary for this, but it says, very approximately, "Readings with the tight wire," or "straight wire, on the crankshaft after remetaling of the bearings of the crank case." Then it goes on to say "Deflections, relevant deflections," or "related crank web deflections," and then the date.

The Court: And that date is?

The Witness: 23/11/60.

The Court: November 23, 1960.

The Witness: Yes.

The Court: All right. Now, what are the web [910] deflections in thousandths of an inch?

The Witness: Taking the maximum at 180 degrees, .94 millimeters plus, is plus .037 of an inch, or 37 thousandths. Point 14 plus, position 3, is plus .006, or six thousandths. .40 plus, position 2, is plus .016, or 16 thousandths. And .35, plus, position 1, is plus .014 of an inch, or 14 thousandths.

The Court: I think you had better write at the bottom readings after re-metaling of bearings—

Mr. Kennedy: Mr. Allen testified to that effect, your Honor.

The Court: Well, if anybody looks at this exhibit it will help me. Then just label it, the top segment and the—well, actually the second segment is the one we are interested in. That's wire alignment readings, and then the last segment is web deflection readings.

Will you do that?

The Witness: Yes, sir.

The Court: Then the exhibit will be meaningful.

[911]

Q. Mr. Bates, with respect to the crank position as shown on the third page of Defendant's Exhibit K, and the crank positions that you have marked for us, that is, at the bottom of each of Defendant's Exhibit D, can you tell us whether the cranks are essentially in the same position in these readings? A. They are essentially in the same posi-

Eric Swire Bates—Recalled—Cross

tion, and this is also because it is a convention. One always shows the connecting rod in this way for this particular reading, because you are mainly interested in the maximum reading you are liable to get, and that is in the 180 degrees.

The Court: I'd better see that.

Mr. Kennedy: I have no further questions of the witness at this time, your Honor.

The Court: All right.

Is there any cross?

Mr. Kritzalis: Yes, sir.

Cross Examination by Mr. Kritzalis:

Q. Mr. Bates, addressing yourself to Defendant's Exhibit V, both of those sheets, is there any way that you [912] can tell as to either sheet what the vessel's condition with respect to presence or absence of cargo was? A. There is nothing stated here on that, sir, at all.

Q. Then you would have no other way of knowing the answer to that question? A. I have a way of knowing by being shown some diagrams, as you are well aware Mr. Kennedy gave me that hypothetical starting in 1962 to 1967 and he read out all the loadings, the fore and aft drafts and the sags and the hogs. And so I am able to say from this that because of the very heavy sag here I would certainly—and knowing, too, that this is related to re-metaling of bearings in a shipyard, that the vessel, unless it went there in distress, went there purposely to re-metal its bearings, it went in a light condition. And the light

Eric Swire Bates—Recalled—Cross Louis George Van Cooten—for Plaintiff—Direct

condition and the sag would relate to each other. In other words, I don't think that it was a fully loaded ship.

Q. But you don't know? A. No. I would hope it wasn't.

Q. Would you expect that those kinds of readings reflected on Defendant's Exhibit V would be taken when the vessel itself is in the water or in a drydock? A. I think they were taken in the water.

Q. Do you know for sure? A. Well, there wouldn't be much sense in taking it in [913] the drydock.

Mr. Kritzalis: I have no further questions.

[931]

Louis George Van Cooten, called as a witness by the Plaintiff, was duly sworn and testified as follows:

Direct Examination by Mr. Kritzalis:

Q. Mr. Van Cooten, by whom are you employed? A. I own Royal Casting Repair. I am self-employed.

Q. How long has Royal Casting repair been in existence?

A. Seventeen years.

Q. Have you always been the owner of Royal Casting?
A. Yes, sir.

Q. What kind of work does Royal Casting do? A. We repair broken and fractured machinery and equipment.

[932]

Q. Before you founded Royal Castings, what did you do? A. I worked for Metalock Repair, who did similar work that I do.

Q. Is that the name of a corporation? A. That's the name, the trade name of Metallock Repair.

Q. What briefly was the principle involved in Metallock Repair? A. In Metallock Repair we can repair broken and—cracked liners, broken machinery, various things including crankshafts.

Q. For how many years did you work for Metallock Corporation? A. Seven years.

Q. In what capacity were you employed by them? A. I left as their foreman in charge.

Q. What did you start as with Metallock? A. I started as a machinist and welder.

Q. During the course of your experience, your sevenyears' experience with Metallock, did you have occasion to work on fractured crankshafts? A. Yes, sir.

[933] Q. Roughly how many fractured crankshafts did you have occasion to work on while you were with Metallock? A. While I was with Metallock I worked at two. One was marine and the other one was for diesel plant.

Q. Diesel what? A. Diesel plant.

Q. Were those repairs successful? A. As far as I know, yes.

Q. What was the principle involved in the work of Royal Casting from the time you founded the company after leaving Metallock? A. We were doing similar type of work, sir.

Q. Is there a particular characteristic which a layman would observe in the kind of work that is involved in either principle? A. Well, we take broken machinery and we put

it back [934] together. If it is cast iron, we don't weld. If it is steel we will do a combination of welding and cold.

Q. Is there any basic principle involved in the kind of work? A. The basic principle would be drilling a series of holes and embedding nickel.

[935] Q. Embedding nickel in the holes? A. In the slots. You must drill the hole, slot it and embed the nickel keys.

Q. How does the word "lock" fit into either principle, Metallock or Masterlock? A. Because it locks the steel together. It locks the broken or ruptured part together.

Q. Is the use of heat involved in locking these broken parts together? A. No.

Q. When you refer to cold— A. And hot.

Q.—cold work, you could use cold work and you could use hot work? A. Then there is a very minimum of heat applied.

Q. During your years starting from the time that you founded Royal Casting up through December of 1967, did you have any experience with broken marine crankshafts, main engine crankshafts? A. Yes, I have.

Q. How many broken main engine crankshafts have you worked on? A. Two, sir.

Q. Were those repairs successful as far as you knew? [936] A. Yes, sir.

Q. Would you remember the names of the vessels involved? A. One vessel as the Algol, it was a tanker.

Q. Do you remember the name of the other vessel? A. The other vessel was the Temios Stavros.

^{*} Should be "was."

- Q. And did both of these jobs involve flying to other parts of the world? A. The Temios Stavros I repaired in Bermuda.
 - Q. And the Algol? A. That was repaired in Hoboken.
- Q. Where is your facility? A. My facility is in Brooklyn.
- Q. If you were sent abroad, if the need arose for you to be sent abroad for a job, what kind of equipment would you take with you? A. First I survey the detail that the shipowner will provide me with, what has to be repaired. Then subsequently I gather my tools and my material that I need. So it can vary numbers of times.
- Q. Prior to leaving, do you generally enter into some form of agreement with the party hiring you? A. Yes, sir.
- Q. Is the agreement the same in each instance? A. No.
- Q. You mentioned this third vessel that you attended in Port Sudan. Could you describe to us briefly the circumstances under which you were called in on that job? A. Well, I was called by the owner, Mr. Calliminopoulos, to his office at 39 Broadway, and he showed me a print and [938] showed me a shaft of the motor vessel—
- Q. The one we are talking about in this case, the Hellenic Sailor? A. Hellenic Sailor. Subsequently he told me that he has his marine superintendent in Port Sudan and he showed me a small sketch drawing what this marine superintendent had in mind of doing as are as effecting a repair to this vessel to continue.
- Q. Did you understand what the repair entailed? A. I was asked by the owner, and he told me it was called a

strongback, which we do things in strongback, bring it together and then repair it. But his was going to strongback it, two bolts welded against the side of the web, and I definitely told the owner that is suicide, it will never hold.

Q. You referred to a strongback repair. If I as a layman were to view a strongback repair, could it be analogized to fitting a clamp in a vise? A. That is correct, sir. The strongback is to bring it together and you effect the repair.

Q. That would bring the two fractured surfaces together? A. Together, yes.

[939]

Q. If you took the connecting rod out-and of course we know the case we are talking about and we have a diagram in front of us and we know what connecting rods we are talking about and the web we are talking about. [940] A. Yes.

Q. If you removed the--you would have to remove, would you not, the connecting rods to do the strongback repair? A. Right.

Q. Would you put them back again while you operated the engine or would you have to cut out that No. 2 crank section? A. Well, circumstances that we are talking about, we are talking about a loaded ship. So your web is still part of your propeller. No matter what you do. Even if you remove the piston, remove the connecting rod, your propeller must still move that whole ship.

Q. Because it is part— A. So your strain is still there.

Q. Because it is still part of the driveshaft; isn't that right? A. That is correct.

Q. Did you discuss those points with Mr. Callimino-poulos when he called you into his office? A. Absolutely, sir.

Q. Do you recall roughly the time that he called you into his office? Roughly? A. Well, this was—

[941] Q. Was it early January of 1968? A. Early January.

[943] The Witness: Yes, sir.
The Court: All right, they will be received.

(Plaintiff's Exhibits 45 through 49 received in evidence.)

Q. Mr. Van Cooten, I hand you these photographs and I ask you whether any of those photographs might depict the kinds of strongback repair under discussing (handing). A. You see no strongbacks here. There are no strongbacks visible.

Q. Let me go back one step. Following your discussions with Mr. Calliminopoulos, were you engaged to fly to Port Sudan? A. I was engaged to fly to Port Sudan, and he immediately sent a telegram to Port Sudan that they should stop with the work as far as putting strongback on.

Q. Do you recall what your financial arrangement—what the terms of your arrangement with the plaintiff shipowner were? A. My arrangement with Mr. Calliminopoulos was that he would pay me \$7,000 on completion of the job, and should Lloyds of London give him a permanent repair ticket, I will get an additional \$3,000.

Q. Was any period of time contemplated for that issuance by Lloyds of a permanent ticket, as you call it? [944]

A. Normally, it is up to the Lloyds surveyors. It could be a year, it may be two years.

Q. Mr. Van Cooten, could you tell us what you observed on the first occasion when you entered the engine room with respect to the fractured section of shafting? A. When I arrived there I took a look, there were some attempted primary repairs being put to each end of the web, because the bolt, strongback bolt, had to come from Piraeus. It was not available in Port Sudan.

[945]

- Q. You mentioned some bolts in connection with the preliminary repairs. Those bolts, were they in place on the shaft in connection with the strongback repairs? A. They were on the end of the web.
- Q. Are those bolts shown in any of these photographs? A. One, as a temporary something here.
 - Q. Referring to Plaintiff's Exhibit 43.

Is it your testimony that the bolt as shown in that photograph on the web that was in connection with the strongback— A. That was preparations for strongback.

Q. Now, could you tell us roughly the time, to the best of your information, when these photographs were taken? And I say that because I notice that the web has some deep indentations or gougings, if you will, on the face. Or rather on the web itself. Do you know when these photographs were [946] approximately taken? A. Yes. They were taken after I have worked, because both sides, have done the same thing to both sides of the web. So this could have been taken after I have worked for approximately a full week.

Mr. Toy: Excuse me, could we just clarify the record? I believe the picture Mr. Van Cooten identified showing a strongback bolt described as Exhibit 43 actually is marked Exhibit 46.

Mr. Kritzalis: I'm sorry.

Q. Now, when you arrived in Port Sudan, did you have occasion to meet Mr. Charles Allen? A. Yes, I did.

Q. Could you tell me what the circumstances of your meeting with Mr. Allen—your first meeting with Mr. Allen were? A. Well, my first meeting with Mr. Allen, I was very surprised. He took a very, very, I would say rough attitude towards me, a dislike.

Q. Did he tell you why? A. That I came from New York, and I was the person that voted down his strongback. And that was most of his hard feelings, that he was positive that his strongbacking would have been the answer.

[947] Q. Do you have any opinion as to whether the strongback repair which was terminated by Mr. Callimanopoulos, effective as of January 7, 1968, would have permitted, if completed, would have permitted the vessel to complete this voyage?

Mr. Kennedy: Objection, your Honor. The Court: Overruled.

Q. I am simply asking whether you have an opinion.

A. Yes, my opinion, it would have been a disaster.

Q. What is the basis for your opinion? A. Because it was inadequate, one. Number two, the crankshaft would have been thrown out of balance with the additional weight

of about, approximately about a ton they would have weighed, these bolts to be laid against the web. So that the web would be completely out of balance, that engine.

- Q. What bolts are these that you are referring to? A. That we didn't see, that—
- Q. Would these have been bolts that would have essentially clamped the strongback to the web? A. Apparently that was the plan.

[949]

- Q. When you started your work, what was involved in that? What did you intend to do and what did you start to do? A. According to my plans when I left New York, I have to pull this thing back together and then—
- Q. That is, pull the two broken halves together? A. Pull the two broken halves together and then attempt my—start drilling out, laying out and drilling.
- Q. You say laying out and drilling. What would you lay out and drill? In other words, what is the— A. The—
- Q. What is the intended result of your repair? What would it have been? A. It would, to my opinion when I finished, it would have a permanent repair.

[950] Q. Ultimately? A. Ultimately.

The Court: This would be a metallock repair; is that right?

The Witness: Yes, sir.

- Q. Was the Lloyds surveyor in attendance while you were doing your work? A. Yes, sir.
 - Q. Do you remember the man's name? A. Mr. Copty.

Q. C-o-p-t-y? A. C-o-p-t-y.

Q. What specifically was involved in your work? I see those photographs which have been received in evidence and I believe that's you in some of the photographs; is that right? A. Yes.

Q. What would be the principle involved? I see a lot of gougings on the narrow part of the web. A. I drilled a pocket into the web right across, halfway across the crack. In other words, the same amount is on both sides of the cracks.

Q. This would be on one short side? A. This will be on both sides where the crack is going [951] across.

Q. I see. A. I brought some steel from New York for that particular work, I had brought some steel, anticipating what I had to do. Then I went deeper and drilled another pocket under the first pocket that I drilled.

Q. Now, do I understand that you would on either side of the crack, you would drill first a large pocket, then a small pocket? A. Then a small pocket.

Q. What would be the purpose of those two steps? A. The small pocket I used and fill it up with weld.

Q. You would fill the small pocket— A. The small pocket.

Q. On either side? A. On either side, yes.

Q. Then what would you do? A. Then I take the big master lock that I call, and imbed that into the big pocket.

Q. And that master lock would be what, a piece of steel?

A. A piece of high tensile steel.

Q. Would any heating process be involved in that? A. The only heating that—

[951a] • • • •

A. The only heating that takes place there is that as you can see in this picture, the ends only being welded, the rest of the material here is being pinned.

- Q. You refer to the ends, of course, and nobody has the benefit of the photographs other than you and I. How would you articulate the spots at which you say welding would be done? A. The end of the steel block that I imbedded into the pocket are only being welded.
- Q. I see. You would sink this steel bar into the pocket—A. Into the pocket.
- Q. And you would weld at each narrow end of the steel bar? A. Each end of it, yes.
 - Q. Then what would you do? A. Then I pin it.
- Q. How would you pin it? A. With—by drilling and embedding pins that I brought with me from New York.
- Q. What kind of pins would those be? [952] A. They are cold-rolled steel pins.
- Q. How would you implant them into the web? A. By drilling and using a pneumatic tool and a punch and impacting them.
- Q. Where would the drilling be done? A. Halfway between the parent metal and halfway between the block.
- Q. This would be the block that you sink into the— A. The block that I sink in.
 - Q. -the socket.

Now, Mr. Van Cooten, at the-

The Court: Wait a minute. You do this on both surfaces of the fracture, wouldn't you?

The Witness: Yes, sir. Both sides have been paired.

The Court: Both sides of the pockets?

The Witness: Of the big pockets.

The Court: Then there is a piece of steel fitted into the big pocket on one side and then the other side of the web is put down on top so that the big piece of steel fits into its pocket; is that right?

The Witness: Yes.

The Court: Then in order to make the—what do you call this piece of steel you fit into the—

[953] The Witness: Master lock.

The Court: The master lock. In order to make it stay in, you drill holes through the web into the master lock; is that right? And insert—

The Witness: Adjacent to them. I work from the top of the pocket. So by embedding the steel in the pocket of course you have a line around the steel.

The Court: I just want to know where—I think I know where the pins go.

The Witness: So then we pin it right between the steel and the parent metal. We drill strictly down 90 degrees.

By Mr. Kritzalis:

Q. When you say parent metal, is that the web? A. That would be the web.

[956]

The Court: And in order to secure the master lock in there you drive these pins in; is that right?

The Witness: Yes, sir.

The Court: All right. I think I more or less have it now. And the pins go in—

The Witness: Full depth.

The Court: Full depth of the—
The Witness: Of the master lock.

The Court: Of the master lock. Are they threaded?

The Witness: No, sir.

The Court: What force do they apply to hold it?

The Witness: Sheer strength.

The Court: What?

The Witness: Sheer strength, for shearing. In other words, what we do, we depend on these pins that—it is impossible for this repair to break unless the master lock breaks.

[961]

Q. I return to you Plaintiff's Exhibit No. 53 marked for identification, Mr. Van Cooten (handing). Would you tell [962] me what that Plaintiff's Exhibit 53 represents? A. It represents the manner in which I do repair in crank webs. Incidentally, we had a crank web on the Sailor we were working on.

Q. I see. Now, did the-

The Court: Is that a model of the method of this particular repair?

The Witness: Yes, your Honor. This is the master lock as we embed it in there.

Q. Mr. Van Cooten, using Plaintiff's Exhibit 53 marked for identification, if you can, could you briefly recapitulate

your testimony of yesterday with respect to the manner in which you intended to perform your repair to the Hellenic Sailor's fractured crank web? A. As the metal has been removed from a portion of the web, I proceed and put another hole into the web. That one is smaller in size than the top one. That was filled with weld. Then I took the master lock, I chamferred two small end, embedded into the pocket, had some weld applied to both short ends and proceed to pin the master lock in place.

The Court: I guess I still don't understand the function of those pins.

The Witness: Those pins go half of the casting and half of the master lock.

[963] The Court: Now, what is it that helps affix the parts that are to be affixed?

The Witness: When they properly are embedded, the pins are of about half-inch, three-quarters of an inch length. I am going to two and a half inch thick. I imbed one pin, I take a punch, a hardened punch with a pneumatic hammer and I will spread this pin into the hole to embrace half of the parent metal and half of the master lock. And that is continued all around the edges. In other words, I will have a solid piece in between.

The Court: In other words, the effect of the hammering is to sort of spread the pin—

The Witness: Yes, your Honor. Spread it under compression.

The Court: All right. Now you are going to eventually—I see. All right. I think I understand.

Q. Now, with the exception of the weld applied to either short end of the master lock and you embedded it in the parent metal, is any other heat used in the course of your master lock fitting? A. No, sir.

The Court: Now let me see. Where would the weld be done?

- Q. First, Mr. Van Cooten, would you fill the inner [964] socket with welding? A. Yes, I did.
- Q. That would be the socket underneath the master lock. The small socket. A. The small socket.
 - Q. You would fill that with weld? A. Yes.
 - Q. Is heat applied to fill that with weld? A. Yes.

The Court: What is the purpose of doing that?
The Witness: That is to gather additional strength.

The Court: All right.

- Q. How deep would you say the inner socket is from the surface of the web? A. From the surface of the web, the inner socket was about four inches down.
 - Q. Four inches down.

The Court: Starting or ending?

- Q. Starting or ending? A. From the top of the web to the bottom of the inner socket is four inches.
- Q. How many inches deep would be the master lock? A. The master lock was two and a half inches deep.
- Q. And the master lock is formed of what kind of [965] material? A. High tensile steel.

Q. So that you fill the inner socket with weld and heat is applied to either end of the master lock; is that correct?

A. Yes.

The Court: You are saying that the inner socket would be about one and a half inches deep?

The Witness: That is correct, your Honor.

Q. Was it your intention to use the master lock on either side of the fractured web? A. Exclusively.

[966] The Court: Excuse me just one minute. The welding at each end, I am not clear, I know you said it, but please repeat it. The welding at each end of the master lock, what was it—

The Witness: The purpose for that-

The Court: I still don't understand how much there was, the purpose, and so forth.

The Witness: Now, the purpose of the weld on the end is twofold: One is to hold the master lock in place while I am pinning it. After I finish pinning it, I automatically just fill that little gap that was put there to make the job look proper. Strength I do not get from the weld on the end. The strength is derived by the pins.

The Court: All right.

Q. And those holes you drill half in the master lock and half in the parent metal are done how? A. With pneumatic drills.

.

[968]

- Q. The parties have agreed, Mr. Van Cooten, that you arrived at Port Sudan and on the Hellenic Sailor on January 16, 1968. Does that help refresh your recollection as to when you arrived there? A. Yes.
- Q. Did you start work immediately? A. I started work immediately.
- Q. What steps did you take in the ensuing days in connection with your work? A. Proceeded to get my material that I brought with me to perform the job, get it on board the ship. Started to set up air lines and went to work and started digging into the casting.
- Q. How long did your work continue? Well, when did your work stop, let's put it that way. A. I would say probably two and a half to three weeks after I started.
- Q. By the time that your work stopped, how far along had you come in your contemplated repair? [969] A. I would say about 95 percent.
- Q. What were you doing at the time your work stopped?

 A. At the time my work stopped I discovered—
- Q. No, what were you doing in connection with your repair? In other words, what was left to be done to the fractured web? A. The back side of the web to be finished.
- Q. And what were you doing at that time? A. At that time I was scarfing the surface, or gouging the top, the surface of the metal where the visible crack was coming from the top of the web going towards the journal.
- Q. Was this on the side of the web? A. On the back side of the web.

.

[970]

Mr. Kennedy: Did the witness say the photographs, 52, 52-A and B, show the area that he was working in when he found the crack?

Mr. Kritzalis: Yes. The Witness: Yes.

Mr. Kennedy: No objection.
The Court: All right, received.

(Plaintiff's Exhibits 52, 52-A, and 52-B received in evidence.)

[979]

The Court: I am looking at Exhibit 40 now. All right. Are Exhibits 40 and 43, are we looking at different ends of the—

The Witness: No, we are looking at the same position. Slightly moved—here's your bolt, move the angle. Here's your rod which is up slightly. Here's your shield on the connecting rod, she's up, she's up a little bit. She's slightly up. This went down because she come up on the face here. This is the back end. In other words, we had one door open in the engine room, this is the back door to the engine room.

The Court: I don't think you are right. I think that the—you see, in Exhibit 40 you see the side connecting rod pin here?

The Witness: Yes, your Honor.

The Court: Now it is in a completely different position in Exhibit 43, is it not?

The Witness: It's on the over side, yes, your Honor. You are right. We cranked it over.

The Court: You have cranked it over?

The Witness: Because this is one side of the repair and this is the other side of the repair.

[980] The Court: So 40 is one side of the repair and 43 is the other side of the repair?

The Witness: The other side of the repair. That is correct, your Honor. Right. We got that straight.

Q. Handing you, Mr. Van Cooten, Plaintiff's Exhibits 52, 52-A and 52-B—handing you Plaintiff's Exhibit 52-A, rather, I believe in response to one of the judge's questions you stated that a master lock is also shown on that photograph; is that correct? A. That is correct.

Q. Could you tell me what that master lock was intended to do? A. Add strength to the repair.

Q. Now, I also notice from the—running from the left-hand corner of the photograph diagonally down in the direction or the upper left-hand to the lower right-hand corner a line. Could you tell me what that line is? A. That line was where I scarfed the existing crank, and I followed it down, the manner of scarfing is by using a [981] cut throde.

Q. And what would you intend to do with that? A. That will just scarf the surface so that I can put a weld over there.

Q. What process would be used on the master lock on Plaintiff's Exhibit 52-A? A. The same method as used for other master lock. And in this case the pins are visible.

- Q. They are already in place? A. They are already in place.
- Q. Would that process be repeated on the front side of the web as well? A. That is correct.
- Q. That would also be over the crack? A. It would also be across the crack.
- Q. Would the scarfing also be done to the crack on the other side of the web, the front side? A. It would also be done.

The Court: I guess I have to have everything twice this morning. I am not clear what scarfing does.

The Witness: The scarfing, your Honor, is to put an indentation into the crack. In other words, where the crack was visible, what I had, I had gouged the metal out, spoon it out about a quarter of an inch.

[982] The Court: You melt it and spoon it out? The Witness: No, by the position of the shaft standing you bring it into position and all you do is make contact with your electrode and it will melt the desired amount that you want to melt away.

The Court: It will just melt it away?

The Witness: Melt away.

The Court: And why do you do that?

The Witness: Because I wanted to put a slight bead of weld over that area for a possible oil leak that might develop throughout the oil hole.

Q. Would you do this scarfing process all the way around the web following the crack? A. Only to where we had feeling that there may be an oil leak.

Q. How far along had you gotten in your repairs, or the repairs that you intended to do to the Hellenic Sailor's web by the time you stopped in terms of everything you intended to do? A. 95 percent.

Q. Had you put the master locks in place on both edges?

A. All master locks were in place.

Q. Had you done your scarfing? [983] A. In the process of scarfing.

Q. Do you recall approximately what date you stopped your repair? A. Date, I am not familiar with, because I was working day and night at the time.

Mr. Kritzalis: Could I have a stipulation, your Honor, on the date?

The Court: What was the date?

Mr. Kennedy: February 1, I believe.

Mr. Kritzalis: February 1.
The Court: February 1.

Had the master locks on the ends been completed, pins in, everything completed?

The Witness: Yes, your Honor.

The Court: On both ends?

The Witness: Yes, your Honor.

The Court: Did any work at all remain to be done on the ends?

The Witness: No, your Honor.

The Court: Now, the master locks on the faces, were they finished?

The Witness: This was the last one.
The Court: The one by the journal?
The Witness: Yes, your Honor.

[984] The Court: Was it finished or not finished? The Witness: It was completely pinned, your Honor, except the ends to be filled up with weld. There was no heat applied—

The Court: The master lock by the side connecting rod pin, was that finished?

The Witness: Yes, your Honor.

The Court: Then the master lock by the journal, was that finished?

The Witness: Not completed, your Honor.

The Court: What still had to be done?

The Witness: As we can see by this print, the end pocket had to be welded and to grind it flush.

Mr. Kritzalis: Referring to Plaintiff's Exhibit 52-A in evidence, your Honor (handing).

The Court: The end pocket—well, the weld was in, wasn't it?

The Witness: That's just to hold it, as I explained to you, the twofold reason that they have, the pockets. One is just to hold the master lock in place so that I can pin it.

The Court: This was just temporary, you were going to replace it with a more permanent weld?

The Witness: We don't replace the weld. We put in a little bit to hold it until after I pin it. Then I [985] return to the pocket and I fill it up with weld. Apply a couple of layers of weld to make it an even, smooth surface.

The Court: All right.

Q. Would it be fair to say that both pockets in Plaintiff's Exhibit 52-A had to be filled with weld still (handing)?

A. Both sides of the master lock. This was the last master lock.

Q. But either side of that master lock on the back face of the web still had to be filled by the time you stopped your repairs? A. The master lock, the ends of it, that's all that had to be done.

Q. That's what I mean. Those had to be filled. They had not—

The Court: That's all right.

Q. Could you tell us what happened next on February 1? A. Then I proceeded after the master lock was pinned, which is customary and mandatory that you scarf the crack where it is visible so that you re-weld it, and as I stated before, to prevent any oil leak if there should be one. In the process of gouging or scarfing the metal I detect a line which to me turned out to be a crack is creeping up in the fillet of the journal. I scarf some more, it was still [986] visible. I scarfed for another two inches. Still visible. Then I stopped. Then I called Mr. Allen, Mr. Copty, the chief engineer, to observe what I have found, because that was never ever seen before. Then we proceeded to drill a hole in the fillet to determine—

The Court: Where is this fillet?

The Witness: The fillet is—that will be the fillet, this is your fillet (indicating).

The Court: Is the fillet a kind of sleeve?

The Witness: No, your Honor, it is the round part of your—

The Court: Between the journal and the web face?

The Witness: Yes, your Honor.
The Court: Is it a separate part?

The Witness: No, your Honor, it is a solid cast-

ing, or forging, whatever it may be.

The Court: But at that point it rounds?

The Witness: It rounds, yes.
The Court: It rounds. All right.

Q. What was the purpose of drilling that hole? A. Drilling the hole was to determine the depth, if possible, the depth of the crack.

Q. How deep did you drill the hole? A. We went as much as three inches. Could be even [987] four, deep, and then we made the hole larger, started with a small drill, then I went to a big drill so that we can have more visibility to see the crack. Then we applied dye check. Dye check is commonly used to detect cracks in steel castings or forgings. There was no way ever to do any X-ray there so that was—of course it couldn't be done. After we saw this—

Q. Did you apply the dye check yourself? A. Myself, in presence of Mr. Allen and Mr. Copty.

Q. Is the dye check shown, or the results of the dye check visible on any of Plaintiff's Exhibits 52-A, 52-B and 52? A. Clearly visible.

Q. Clearly visible? A. Clearly visible.

Q. What on those photographs shows the dye check?

A. The red lines indicate the cracks.

Q. On Plaintiff's Exhibits 52 and 52-A, is that the hole that you refer to? Do those photographs show the hole that you drilled? A. Yes, sir.

- Q. Now, addressing ourselves to the hole on both those photographs that you have before you, does the dye check show in those holes? [988] A. Yes, sir.
 - Q. As what does it show? A. It shows the crack.
 - Q. What color does it show it? A. Red.

The Court: May I see those pictures? Let me understand. You were scarfing—come up here again.

The Witness: Yes, sir.

The Court: Now, let's look at Exhibit 52-A. You've got this metal lock on the face of the web; right?

The Witness: Yes, your Honor.

The Court: And above the metal lock you've got this bead of weld?

The Witness: That's not weld there yet, your Honor, I was digging.

The Court: That's just the digging?

The Witness: Yes, your Honor.

The Court: But that's where you were scarfing the crack?

The Witness: Yes, because that crack is coming from top down to the side.

The Court: But this is where the crack was and you had scarfed it?

The Witness: Yes, your Honor.

[989] The Court: Now you come down past the master lock.

The Witness: And the crack was still visible.

The Court: And that again is scarfing?

The Witness: Yes, your Honor.

The Court: And you scarfed down how far?

The Witness: To here.

The Court: Well, let's mark it with an X. Where did you stop scarfing?

The Witness: I would say I stopped about-

The Court: You mark it. Put an arrow and write "stopped scarfing."

Now, what happened after you-

The Witness: Scarf?

The Court: Yes.

The Witness: Then I saw this crack where I stopped scarfing is continuing. There is continuation now of the scarf.

The Court: And it continued— The Witness: Into the fillet. The Court: Into the fillet.

The Witness: So she came down and then picked up and went this way.

The Court: Wait a minute. You saw the—and this was on February 1?

[990] The Witness: Yes, your Honor.

The Court: And you saw that the crack extended—

The Witness: It extended.

The Court: It had not before appeared in the fillet?

The Witness: It appeared in the fillet.

The Court: And now it suddenly appeared in the fillet?

The Witness: Yes, your Honor.

The Court: How far did you see it into the fillet at that time?

The Witness: It came, I would say, about 8 to 10 inches below where normally it should have stopped, should be no cracks there, and she went down, then she start to go up. Had she continued down, maybe I would have still continued to repair it.

The Court: But it sort of took a V shape?

The Witness: Took a V shape and got into the journal.

The Court: Going into the journal?

The Witness: Yes, your Honor.

The Court: Can we see it on any of the photographs here?

The Witness: Yes, it is visible here. See the red lines (indicating)?

The Court: I don't see it.

[991] The Witness: See the red line, your Honor? There, this is your crack. Here it is. Maybe it's better in this one.

The Court: I see. And that's shown by the dye check?

The Witness: Yes, your Honor.

The Court: I see. I am looking at Exhibit 52-B. All right. Now, then, let's go back before we had any crack on the fillet. The crack on the web itself, did it go through where the journal was and resume at the other side? I guess I don't have a clear picture of that. Do you understand what I mean?

The Witness: If she came straight through to the web that went into the other side?

The Court: Yes.

The Witness: As far as the opposite side, in other words the—

The Court: Where was it on the opposite side? The Witness: The opposite side is coming all the way down.

[992]

The Court: All right. Now, the thing that confuses me is on this 52-A, it looks like the crack runs into the journal.

The Witness: Because the picture was taken on this angle you see. That's why you get this angle view. Your journal is still here.

The Court: I see. Well, how did the crack in the web run on this 52-A? Let's forget the crack in the fillet. How did the crack in the web run? Where did it go?

The Witness: The crack on the web will run next, past it, come to the other side.

The Court: It runs just above the fillet?

[993] The Witness: Above the left

The Court: Above the fillet?
The Witness: Above the fillet.

The Court: On Exhibit 45 we've got a picture of the web face by the side connecting rod pin, do we not?

The Witness: Yes, your Honor.

The Court: Now, the crack looks to me to run right into the pin.

The Witness: It did not, your Honor. The Court: Well, where did it run?

The Witness: This is hand-drawn with chalk, incidentally.

The Court: I know, but it says "crack."

The Witness: Yes. I wrote this down. What I am referring to is this crack, mostly. The way Mr. Allen took the picture indicated this way, but that did not go into there because as you see this is asbestos I wrapped around not to scorch the-

The Court: I see.

- [998] Q. Do you have any opinion as to whether if you had resumed your work and the connecting rods were connected up and the engine turned over, whether that crankshaft could have operated with your master lock repair? A. In the condition I left it with the crack?
- Q. Yes, that crack that you found. A. It could never have worked.
- Q. If that crack that you found had occurred earlier at another occasion then the crank- A. I would have stopped working-
 - Q. -the crack through and through-

Mr. Kennedy: Objection. The Court: Overruled.

Mr. Kritzalis: Could I have the question read back?

Mr. Kennedy: Your Honor, there is no testimony as to when the crack occurred.

The Court: Well, there is his testimony. Mr. Kennedy: As to when he found it.

[999] The Court: He said it wasn't there before. Objection overruled. That goes to the weight. All right.

(Record read.)

Q. Let me start again, Mr. Van Cooten.

Do you have any opinion as to whether the crack that you found during the course of your scarfing was part of the first crack or whether it was a new second additional crack? A. That crack was there—

Mr. Kennedy: Objection.
The Court: Overruled.

A. -all the time.

Q. Do you have an opinion as to whether that crack came from the first crack? A. Yes.

Q. And that was the crack right through the web; is that correct? A. That is correct.

The Court: Let me ask, when you say the crack was there all the time, you are talking about the fillet crack.

The Witness: The fillet crack.

The Court: And you are saying it came from the crack in the web?

The Witness: Yes, your Honor. It was not visible until I scarfed the surface. Then it appeared.

[1000] The Court: Well, you didn't scarf the fillet.

The Witness: I did partially, if you look in the pictures, your Honor.

The Court: Well, you told me—I thought you said you saw the crack on the fillet when you were still scarfing the web face; is that right?

The Witness: Yes, your Honor. And then the crack proceeded, took a different angle, a V angle. In the fillet. It took a V angle.

The Court: But you first saw the crack on the fillet when you were still scarfing—

The Witness: The face.

The Court: —the web face before, before you had scarfed the fillet, of course.

The Witness: Yes.
The Court: All right.

[1003]

- Q. Can you show me on Plaintiff's Exhibit 52 the crack that you found (handing)? A. There it is (indicating).
- Q. I will ask you to draw some lines on the photograph in a second.

Can you show me the crack through the web? Is that on that photograph, Plaintiff's Exhibit 52? A. Crack through the web?

- Q. Yes, as opposed to the crack through the fillet. A. All right.
 - Q. Is that on that photograph? A. It is visible.
- Q. And is there a point at which the two meet also shown on that photograph? A. That you will have to guess. It shows where the second crack starts up.
- Q. Could you take a red pen and draw three arrows on that photograph? Draw an arrow in the direction that you were working from the main crack.

Now draw an arrow from the direction that the second crack was found from the first. And label the first [1004] arrow No. 1 and label the second arrow No. 2.

And draw a second arrow in the direction that the second crack proceeded along the fillet, and label that No. 3.

Assuming the crack through the web which you have pointed to with arrow No. 1 didn't exist. For how long could that crankshaft have operated if it had in the journal, in No. 3 journal in that fillet the crack as shown, or the direction as shown with your arrow No. 3? A. I had better come back with the question.

You said one thing and you differed it to something else.

Mr. Kennedy: Does the witness want the question repeated or rephrased?

The Court: Let's have it read.

(Question read.)

- Q. If you can't answer the question, just tell me you can't answer the question. A. I cannot answer the question in that manner.
- Q. Would you want to know more facts? A. If I may stress what—this is just my opinion, the way you want to ask me the question is that if there was no crack in the journal—

Mr. Kennedy: Objection.

The Court: Well, let's hear your explanation.

[1005] The Witness: It is my opinion.

The Court: Yes.

The Witness: I think maybe counsel is trying to find out from me if there were no crack in the journal found, how long would this repair have—

The Court: All right. What is the answer to that?
The Witness: My answer to that is that it ultimately could have been an indefinite repair.

The Court: You are assuming the original web crack with your metal lock repair?

The Witness: Yes, sir.

The Court: And you are saying it could have lasted—

The Witness: It could have lasted forever.

[1006]

Q. Going back to my earlier question, Mr. Van Cooten, perhaps you didn't understand me or I didn't make myself clear.

Forgetting about your repairs, now, what did—pretend you had never gone to the Hellenic Sailor. We know you did, and we know you saw, you observed. But assume that the crack in the web did not exist, and only the crack is found in the fillet, in the journal. Could that shaft have operated with that crack for a period of time, any period of time? Do you understand the question? A. No crack in the web, just the crack in the journal?

- Q. That's right. A. That's very problematical because it would continue in its course, that crack, and eventually saturate from the opposite side, and cause heavy damage.
- Q. How long would that take, in your opinion? A. That I could not answer.
- Q. To your knowledge, was there any damage other than the damage to the crankshaft on the Hellenic Sailor as a

[1007] result of the fracture we have in this case? A. Not that I have seen.

Cross Examination by Mr. Kennedy:

Q. Mr. Van Cooten, were you paid by Hellenic Lines for the work you did for them at Port Sudan in 1968?

A. I was partially paid, sir.

Q. How much were you paid? A. I was paid \$1500, sir.

Q. Why weren't you paid the \$7,000 that had been agreed to? A. Because the job was not completed, sir.

Q. Did I understand your agreement with Mr. Callimanopoulos to mean that you would get \$7,000 only if the job was completed? A. If the job was completed, yes.

Q. In your discussions with Mr. Callimanopoulos concerning the possibility of your being hired, did you at all discuss what would happen in the event the job could not [1008] be completed? A. I do not take jobs on those conditions, sir.

Q. Were there any discussions had with Mr. Callimanopoulos or anyone else at about the time you were paid \$1500 for the job? A. When I came back from Africa I discussed with Mr. Callimanopoulos, and I objected very hard, but he told me, Mr. Van Cooten, the job is not complete as per our agreement, and I feel that is what I can pay you.

Q. Did he give you an opinion at all as to why it wasn't completed? Did he blame you for the failure? A. No, sir.

Q. Getting back to your earlier testimony of yesterday, you said that Mr. Callimanopoulos called you and told you

about some repair plans that had been devised by Mr. Allen; is that correct? A. That is correct, sir.

- Q. You were asked to prepare a sketch yesterday? [1009] A. Yes, sir.
- Q. Now, is the sketch that you have prepared your concept of what the Allen repairs entailed? A. Maybe.
- Q. Maybe? A. I am assuming that's what he may have in mind to do.
- Q. And this is why you thought it would be suicide to do this kind of a repair; is that correct? A. As per the discussion with Mr. Callimanopoulos, he made me understand in his mind what he understood Mr. Allen would do. And I in turn told him of a very dangerous condition that may arise.
- Q. Then was this drawing that you have prepared, that you prepared yesterday, prepared to reflect your conception of what the Allen repairs were, or the Allen intended repairs were? A. Intended.

[1010]

- Q. Did Mr. Callimanopoulos tell you that Mr. Allen had consulted with the shipbuilder in connection with this temporary repair? A. I am not sure if he did tell me that. I don't recall it.
- Q. If he told you that he had, would it have changed your opinion as to the reliability of the temporary repairs? A. May have.
- Q. Why is that? A. Because Mr. Callimanoupoulos owned the vessel and if he goes to the shipbuilder and the shipbuilder wants to offer an opinion that has never been

proven before, then it is up to Mr. Callimanoupoulos to accept it. This particular repair that was so-called devised and to be implemented was carrying almost a ton of steel to the crank. That alone is enough for a marine engineer or whatever you may call them, anyone knowledgeable with shafts, will completely advise against.

Q. Are you a marine engineer? A. Yes, sir.

Q. Would your opinion concerning these repairs change if you had been told that the manufacturer of the engine recommended them? [1011] A. I would still tell Mr. Callimanopoulos it would not work because that's my opinion.

Q. Do you have any experience at all, sir, as an engine designer? A Designer? No, sir.

[1012]

Q. What kind of metal are we concerned with in the Hellenic Sailor? A. I think that had to be also a forging.

Q. What leads you to that conclusion? A. To that conclusion because the way it was machined. When it is forged it is not machined all around. I'm sorry, [1013] I want to rephrase that. When it is cast it is not machined around. When it is forged it is machined around.

Q. So it is the way it looked with respect to its machining that led you to the conclusion that it was forged rather than cast? A. That is correct, sir.

Q. When you do a metal lock on a fractured web, does your process vary at all depending upon whether it is a forged web or whether it is a cast web? A. Shape of it varies all the time in repair.

Q. The shape— A. —of the thing, of the casting to be repaired will vary on the repair that will be contemplated.

Q. Well, I don't think you understand me. What I am getting at is, is there one type of a metal lock or one type of metal lock procedure when working on a forged web and another type of procedure when working on a cast web? A. No, you will go to the same procedure as to embed master lock. However, in reinforcing, the particular casting will become different.

Incidentally, in speaking of the Sailor, no mention ever was made that I put a strap completely around the whole leg.

- Q. You mean the whole web? [1014] A. The whole web.
- Q. What kind of a strap was this? A. You put a strap, there was eight by one, it could be one and a half, forged in Port Sudan, I put it in two pieces, bend it over and butt-strap it, weld it. She was completely tied in.
- Q. Was this something similar to a strongback? A. No, this you wouldn't call a strongback.
- Q. What would you call it? A. Because a strongback has to be removed. Its purpose, a strongback's purpose is to hold it until you do a repair. That's the way I phrase a strongback. A strongback never stays on the job. It must be removed.

The Court: What did you call the thing you put on?

The Witness: A strap.

The Court: How much did that weigh?

The Witness: I will be guessing, your Honor. Maybe about six to eight hundred pounds. But the fact that it went all around the web instead of laying on two sides, this embraced the whole web.

The Court: You don't feel that would have the same weight and balance problems as the—

The Witness: It may have an insignificance imbalance on it.

[1015] Q. Would the master lock cause an imbalance? A. No, sir, because metal was removed and metal was replaced.

Q. The same weight removed as replaced? A. That is a question that you will have to measure an ounce of high tensile steel and an ounce of the parent metal. In most instances it is sometimes less weight that you put in due to the fact that you drill and you have webs between the holes where you put your pin.

Q. Referring to this imbalance, would the maximum designed rotation speed of the engine have something to do with the imbalance that one might expect? A. If the imbalance is significant it will at 20 or 30 r.p.m. in an engine of that capacity affect.

Q. Well, how great an imbalance do you need in order to consider it significant? A. That I do not have the formula. In this particular type of engine in the length of the web, in the stroke, the bore, you must also figure that out with your form and then you will know how much weight you can then imbalance the engine or what its capacity might be in imbalancing the engine.

Q. I don't think I got an answer to my question. Do you know what the design speed of the Hellenic Sailor is, or was? [1016] A. The design speed?

Thus in the reporter's minutes.

- Q. In terms of r.p.m. A. I am not an engineer of the ship. I don't know.
- Q. Well, if you were to—I take it you don't know the running speed, or running r.p.m.'s, do you? A. No, I do not, sir.
- Q. If you were to reduce the r.p.m|'s in the main engine, might this not compensate in some degree at least for any imbalance in the shaft? A. Again, I must answer you that question that you must figure out the stroke, the bore, the length, the pitch angle at dead center or low center of your connecting rod to know how much. I don't know.
- Q. Would the fact that the—assuming an imbalance now as the result of a temporary repair, would the fact—

The Court: When you gave your opinion to Mr. Callimanopoulos that this was a disaster, had you figured out those things?

The Witness: Hearing a ton of steel, that was what was mentioned to me, a ton of steel would have been added to the web, and that alone I am sure will be an excess in any crank.

The Court: Did you find out how fast they planned to run the engine and did you then figure out really whether [1017] the imbalance would or would not be a significant imbalance at that speed?

The Witness: Speed was not discussed with Mr. Callimanopoulos, as to how much it will be reduced. He said the plans to go at a reduced speed were a ton of steel added to it. I said, well, to my opinion, the strongback deal is maybe good to bring back the crank, but not to leave it on the ship. As it is running.

- Q. During the time you had the discussions with Mr. Callimanopoulos, did you know or did he tell you which web was fractured on the Hellenic Sahor? A. Yes, sir.
- Q. Did he describe it to you in terms of whether it was a main web or a side web? A. I was shown pictures, sir.
 - Q. So that you knew it was a side web? A. Yes, sir.
- Q. Would an imbalance in a web be more significant on a side web or on a main web? A. This ship has only side webs, sir.
- Q. Assume that it has main webs, too, would you answer my question? A. Assuming it had main webs, an imbalance would affect it?

 [1018]

Mr. Kritzalis: I object, your Honor. Hasn't the witness answered the question that there are only side webs on the ship?

The Court: Well, let's get cleared on that.

When you say only side webs, it's got two sizes of web; is that right?

Mr. Kennedy: Apparently he doesn't know.

The Witness: To me there is two side webs where your connecting rods are locked onto. What do you—may I ask—

Q. Let me put the question.

Didn't you testify concerning repairs you had done on crankshaft? A. Yes.

- Q. Is that correct? A. That is correct.
- Q. And you know all about crankshafts?

The Court: We may just have a language difficulty. He has looked at the pictures, he has been

there, and I think he knows physically. Now, let's not play around with language problems. You remember the pictures where you were standing you had the web that was broken; is that right?

The Witness: Yes, your Honor.

The Court: Then a little farther away from where [1019] you were there was a bigger thing, we called it a web.

The Witness: Oh, you want to call it a web. To me it is one continuous—well, you can—from the journal towards the connecting rod you want to call that side web. Okay.

The Court: I think we have just got a confusion of terms here.

Mr. Kennedy: Well, your Honor, the witness at one point said that there were, I believe he said there were four webs and—

The Witness: Eight side webs.
Mr. Kennedy: There were what?
The Witness: Eight side webs.
Mr. Kennedy: In a crank?

The Witness: In this particular one.

The Court: I just can't have time wasted. There is a language—we have had trouble among ourselves using different terms for things. Let's not piddle around with that.

Q. Getting back to the imbalance, would it make any difference whether the imbalance was on the big web or the little web? A. On the little web it wouldn't make that big difference.

[1020] Q. It wouldn't. A. Again, if what you are calling the little web are behind, towards the journal.

The Court: That's the one that was broken.

The Witness: We are getting all—that's what I said before, if you want to call the part from the journal out to where the connecting rod, you want to call that web and call the other part going behind, you want to call that little web, that's exactly what I just said prior to that.

Mr. Kritzalis: I am handing the witness Plaintiff's Exhibit 43, your Honor.

The Court: All right. Now, Exhibit 43 is one we have looked at a lot.

The Witness: Right.

The Court: You see the journal, then you see the [1021] broken web; is that right?

The Witness: Right.

The Court: Now, I thought when we were talking a minute ago about the little web, that's the web we were talking about.

The Witness: Now, this web is-

The Court: No; is that right or wrong?

By Mr. Kennedy:

Q. You are pointing now to the web which you repaired. Which web is that, the big web or the little web? A. This is the back of the same web that's extended out, that's the back of it.

The Court: Is it the big web or the little web?
Mr. Kritzalis: Just point to the web you are talking about.

The Witness: This web.

Mr. Kennedy: The metal lock web.

Mr. Kritzalis: And that's the little web?

Mr. Kennedy: Referring to?

Mr. Kritzalis: Is that what you referred to? The Witness: That's the web I'm talking.

The Court: And that web is—if you go past the connecting rod pin you see a bigger web, don't you?

The Witness: That is correct, your Honor.

[1022] The Court: All right, to me that's the big web and the broken web is the small web. Do we agree?

The Witness: Okay, your Honor.

The Court: All right. Now, if you have an imbalance in the little web, does it make a difference in the ship running at a slow speed?

The Witness: In this particular ship it would, your Honor.

The Court: It would?

The Witness: Yes, your Honor. Because of the size of it.

By Mr. Kennedy:

Q. The size of what? A. The web.

The Court: The size of the little web?

The Witness: The little web, yes, your Honor.

Q. When you gave your opinion to Mr. Callimanopoulos did not know the size of the various webs? A. Yes, sir.

Q. How did you know that? A. He told me the size of this web, sir, the one I was going to repair, he told me the length of it. The other web we were not concerned with. We were only concerned with this web, he gave me the size of the web so that I can gather [1023] the material that I need to take with me to Port Sudan to repair it.

The Court: What did he tell you about the size? What did he say?

The Witness: 12 foot in length. Something in that area. The length of the web.

[1024]

The Court: I don't understand why you— Look, it seems to me it has become important to find out exactly what was said between him and Callimanopoulos, and you have left it in this general vague condition. He now says that Callimanopoulos told him the web that he was working on was 12 feet long. Well, that was the big web.

Mr. Kennedy: I recognize that, your Honor.

The Court: Well, I don't want-

Mr. Kennedy: You are asking me to rehabilitate the witness, your Honor.

The Court: I just think that the whole—I mean, nobody has really bothered to ask him what the whole conversation was, and exactly what he was shown. Was he shown drawings, blueprints? Those

are the facts. Everybody sits around and deals with these conclusions.

Q. When you visited with Mr. Callimanopoulos for the purpose of discussing the metal lock repairs, did Mr. Callimanopoulos show you a diagram of the Allen repairs? A. He showed me a drawing, sir.

Q. A drawing? A. Yes, sir.

Q. Was it based upon the contents of that drawing-

[1025] The Court: What was the drawing? The Witness: It was a hand-drawn print, it was shown to me—

The Court: Do you have a copy?

The Witness: No, sir.

The Court: Does Hellenic Lines have a copy?

The Witness: I do not know, sir.

Mr. Kritzalis: No, sir.

The Court: What did it look like and what did it show?

The Witness: This was an engineering drawing as we have copies like this, it was drawn up and give me an opinion what to expect—

The Court: No, no. Just a moment. How big

The Witness: No, sir. No blueprint.

The Court: About the size of a legal pad?

The Witness: One of these pads, yes, sir.

The Court: Was it a sketch or was it an official drawing? Had it been prepared by the time you saw it?

The Witness: A hand-drawing was made to familiarize me with what to expect—

The Court: No. Just a minute. Mr. Callimanopoulos showed you a drawing; is that right?

[1026] The Witness: Yes, sir.

The Court: Did he make the drawing in front of you?

The Witness: No, sir.

The Court: It had been made before you got there?

The Witness: Yes, sir, your Honor.
The Court: Did he say who made it?

The Witness: No, sir.

The Court: Did it show who made it?

The Witness: No, sir.

The Court: Was that drawing of the whole crankshaft, part of the crankshaft, or what?

The Witness: No, sir.

The Court: What was it of?

The Witness: It was part of the crankshaft. The Court: What parts of the crankshaft?

The Witness: The web that I had to work on in relation with the journal.

The Court: So you are telling me—did the drawing contain the journal?

The Witness: It stopped half journal, full web and half pin.

The Court: And did it have dimensions on it? The Witness: I don't recall, your Honor.

The Court: What exactly did Mr. Callimanopoulos [1027] tell you?

The Witness: The main discussion with Mr. Callimanopoulos was monetary, your Honor.

The Court: All right. Now, let's pass the monetary. What else did Mr. Callimanopoulos tell you other than about monetary matters?

The Witness: About his superintendent engineer, the repair that he intended to do.

The Court: What did he say about that?
The Witness: He asked my opinion what—

The Court: What did he describe? He must have said something to you before he asked your opinion. What did he say?

The Witness: He said he has Mr. Allen in Port Sudan and Mr. Allen proposed to put this big strongback, and incidentally, they weighed about a ton or better in the weight—

The Court: You are quoting Mr. Callimanopoulos now?

The Witness: I wouldn't say word for word, your Honor.

The Court: Well, in substance?

The Witness: Because it's been eight years, your Honor.

The Court: Well, just as best you remember I want [1028] to know what Mr. Callimanopoulos told you.

The Witness: As best as I can recall. As best as I can recall is that what would I think of such a repair. I says—

The Court: No. No. What did he tell you before he asked you the question? Do you remember?

The Witness: No, your Honor. In essence we were talking about the strongback, that was the discussion.

The Court: Did he tell you anything about the contemplated speed of the ship running with the strongback?

The Witness: Contemplating that they will reduce speed.

The Court: And did he tell you how much?

The Witness: No, your Honor.

The Court: Did he tell you anything about the r.p.m.'s of the crankshaft?

The Witness: No, sir.

The Court: Did he tell you anything about the—did that drawing contain a drawing of the strong-back?

The Witness: No, sir.

The Court: Did he show you anything else besides the drawing?

The Witness: It was shown to me where the strongback were attempted to be placed.

[1029] The Court: Did he show you anything besides the drawing?

The Witness: No, sir.

[1038] The Court: All right. That may be the state of the record. I just didn't want to—now, another thing. We go to the subject of web deflection readings. Now, Exhibit A-L has that statement: crank web deflections as measured with the webs in a down position and after repairs to the vessel's main engine in September 1962 were as follows. And it lists more readings. Then it goes on to say there

is no evidence of crank web deflection having been taken after that time and up to the time of the crankshaft fracture in December of 1967.

Now, Mr. Allen, in his deposition, and this is a part that the plaintiff has designated, page 176, he was asked by Mr. Kennedy, did Hellenic—I guess it was Mr. Kennedy—yes—"Did Hellenic Lines from time to time have web deflection readings taken?" Answer, "The chief engineer took them almost every voyage."

Question, "Did you record them anywhere?" Answer, "Yes, he recorded them."

Question, "Since I probably wouldn't recognize the readings even if I saw them, I would ask you to tell me if such readings are contained in the company records that we have here today. That is, if you know."

Answer, "No, I don't believe so. The chief engineer kept those, and unless there was something abnormal [1039] I wouldn't do anything about it."

That's all the deposition on that point that has been designated. So I think you had better figure out how—

Mr. Kennedy: I called for production of them on the notice for discovery, and I don't have any, and I am going to take the position that there aren't any.

The Court: Well, it may be that—all I am saying is that Exhibit A-L says, it has this statement which is a statement of the state of the record, Mr. Kennedy.

Mr. Kennedy: That's right.

The Court: And we talked about it yesterday, and we agreed that it was correct—well, I don't think you can say now that there is no evidence of crank web deflection having been taken because Mr. Allen says that they were. What we really have is Mr. Allen saying they were taken, and of course Mr. Allen also said they were essential. But we haven't got any of the actual readings. I think that's the way the record now stands.

Mr. Kennedy: Well, I prepared the statement, your Honor, before Mr. Allen's testimony was read into the record, or offered.

The Court: All right. I just wanted you to know that's the way I understand the record right now.

Mr. Kennedy: The state of the record is there are [1040] no web deflections in evidence except for the Genoa web deflections and the Piraeus web deflections in 1962.

[1049]

Mr. Kennedy: Your Honor, before we recessed the subject of the meaning of the letter F, the prefix F, came up.

The Court: Yes.

Mr. Kennedy: Mr. Kritzalis has taken the position that it means that the work was performed off the ship. That is not my understanding as to what it means. Now, I do have a letter from the—a copy of a letter that the chief sent, [1050] it is in Greek and in it he explains what the letter F means. I have been told by my translator that it means that the

letter F corresponds to work done in connection with the main engine damage. Mr. Kritzalis is conversant with the Greek language, he could review it and tell the Court whether I am correct.

Mr. Kritzalis: I will, your Honor, amend my statement with respect to the letter F having checked with the chief engineer who has in fact filled me in on specifically what it means. I was misinformed to this extent. It was work performed by outside workers. In other words, people not members of the vessel's complement but not necessarily work performed ashore.

The Court: All right.

Mr. Kritzalis: Outside people.

The Court: All right.
Where are we now?

Cross Examination by Mr. Kennedy (Continued):

Q. Mr. Van Cooten, before the recess I asked you about welding work that had been done on the vessel. A. Yes, sir.

Q. And you referred to—I think I directed your attention to an entry in the ship's rough engine log, the [1051] date being January 16, 1968, and asked you to—

Mr. Kritzalis: Objection.

Q.—and asked you to describe, or tell us what was being done. A. Yes, sir.

Q. In the way of welding on that date.

The Court: Do you object?

Mr. Kritzalis: I object to the characterization of that document as the vessel's rough engine log. That is a translation, I believe, if I am not—

The Court: We understand. You are talking about Exhibit—

Mr. Kennedy: Exhibit A-P.

Mr. Kritzalis: A-P.

The Court: A-P. All right.

Mr. Kritzalis: That is the chief's work journal. Mr. Kennedy: Entitled working log from 12-24-67

to 8-24-68 from the engine log book.

The Court: All right.

A. The metal plate that I heated red hot is used by people that understand what they want to accomplish with it. In other words, what I did with the plate, being there was still a separation in the two breaks of the crankshaft, by heating the plate I expanded the plate, then I weld the plate [1052] to the face of the web and when that plate contracts, it brings back the crack and closes it. That's the purpose of putting that plate there.

Q. And was it your intention to have this plate remain on the web? A. No, sir. No, sir.

- Q. It would be removed at- A. It was removed, sir.
- Q. When? A. After the repair was effected, sir.
- Q. After the metal lock was installed? A. Installed, yes, sir
- Q. Did you put such a plate on both sides of the web?

 A. Where it was needed, sir. It was not necessary on the side of the journal. The web was not that much open then.
- Q. You mean you didn't put any of these hot plates, if I may use that expression— A. On the side—

- Q. —on the side of the web where the journal was? A. No, sir.
- Q. And you are referring now to the journal that was subsequently found with a fracture in the fillet? A. That is correct, sir.

[1053] The Court: Was there part of that web that was still attached?

The Witness: Yes, sir.

The Court: Which side was that on? On the journal side or the pin side?

The Witness: On the journal side, your Honor. The Court: And the crack was more open on the

pin side?

The Witness: That is correct, your Honor.

Q. Referring again to the-

Mr. Kennedy: Your Honor, there may be an objection to this line of questioning, and I would like to clarify it first. One way to do it is to ask the witness when he next did some welding, and I think the quickest way to do it is to refer him to the logbook and have him testify as to what he was doing.

Mr. Kritzalis: Well, if Mr. Kennedy would give the witness a minute to refresh his recollection on the basis of Exhibit A-P, I might not make any objection.

The Court: It is a simple matter. You can ask him a question or you can refer him to something. But I don't think there is any problem about it.

- Q. Mr. Van Cooten, referring to the entry F-2 at Port Sudan on January 17, can you tell me whether there was any [1054] welding being done in connection with that operation? A. No, sir.
- Q. Referring now to the entry F-2 on January 22, there appears to have been welding done. Would you explain exactly what was being done at that time? A. That's the 22nd of—
- Q. 22nd of January at Port Sudan. The entry F-2. What kind of welding was being done? A. Well, I could have just tack-welded that because the size of weld that is insignificant to a casting that size.
- Q. Would this have been in the area of the journal pin?

 A. No, sir.
- Q. Would your answer be the same with respect to the welding of the broken web that is referred to on January 23 under the paragraph F-1? A. Well, that welding, as you can see, sir, is as it is phrased here, is just a matter of holding the position that I have brought back the web.
- Q. This was welding that you were doing at this time to keep the web in place? A. To keep the web in place.
- Q. To keep the fracture closed? A. To keep the fracture closed so that I can start the actual metal locking working.
- [1055] Q. Referring to Plaintiff's Exhibit 48, a photograph, I notice some kind of an object placed on the web just under the letters "cracked." A. That's it.
- Q. That's what you were doing? A. You hold it together.
- Q. Would you tell us where this piece is with respect to the journal? A. This piece is on the back side of the journal. The journal is on this side where I am leaning over.

- Q. What is the material, or, referring to the photograph just under this piece that has been welded on the cracked web, would you tell us what this is? A. This is the pin covered by asbestos.
- Q. Which pin? A. The pin of the connecting rod. The connecting rod pin.
 - Q. The connecting rod pin? A. Yes.
- Q. And the pin that fractured is the journal pin on the other side? A. That's the journal, yes.
- Q. And you said there was no opening of that side; is that correct? [1056] A. No, not to my knowledge.
 - Q. When you— A. You are talking about the pin side.
- Q. On the journal side. A. I did not see any opening in the journal.
- Q. Was there any crack in the web on the journal side? A. Yes, sir.
- Q. If there was a crack in the journal on the web side, is there any reason why you didn't put a similar piece of metal alongside that crack? A. It was not necessary because the web was not that much open over there.
- Q. You mean it wasn't opened, it wasn't cracked as much on that side? A. If you want to call it that manner, it was not cracked that much.
- Q. Referring again to the vessel's engine log, do I take it that the entry F-1 for January 24 referring to soft pieces of—soft steel pieces on broken web refers to the master lock process? A. No, sir, that's the pieces that, put soft steel pieces on the broken web, that's the pieces you see there, to hold it together.
- Q. Referring to the piece shown on the web in [1057] Plaintiff's Exhibit 48; is that correct (handing)? A. This

piece and this piece here and this piece is just to hold it together (indicating).

- Q. What other piece did you—you referred to this flangelike piece, you put that on, too? A. Yes, that's all I could find to hold it together.
- Q. How about the bolt, did you put that on, too? A. That's it.
- Q. Do you recall referring to this bolt when you testified yesterday, that is, the bolt that appears on Plaintiff's Exhibit 48? A. What, if I may ask—
- Q. It also appears on Plaintiff's Exhibit 46 (handing). A. That shows the same bolt that we have there to hold the crack together.
- Q. The bolt on 46 is the same bolt? A. It is the same bolt.
 - Q. Do you recall testifying about this bolt yesterday?

The Court: What difference does it make if he recalls testifying yesterday? The record will speak for itself.

- Q. Mr. Van Cooten, would you briefly examine the entries that appear in the log, the F entries particularly, and those that I have clipped and they should refer to [1058] welding work of some kind, and would you tell me whether they indicate that there was welding being done in the way of the web and the main journal? A. All right, I am ready for you, sir.
- Q. Referring to the log entries you have just examined, is there any reference to welding being done in the way of the web at the main journal? A. I mentioned that I put

at the side of the main journal the manner in which I put a master lock, that a piece of steel which in this case it was 2 by 2 by 12 was embedded in the end of the steel were welded.

Q. And this welding was in the way of the main journal of the web? A. It was to both.

[1059]

- Q. You mentioned using a cut throde. How much heat is produced by that? A. Enough so that to melt the surface of the steel.
- Q. Did you do any of this work in the way of the main journal? A. I started before the crack and continued down.
- Q. You did some cutting, too; isn't that correct? A. That is cutting, sir.
 - Q. That is cutting? A. Yes.
 - Q. It is the same thing? A. Yes.
- Q. And scarfing is cutting? A. Scarfing, cutting, gouging; you name it.

[1060] Q. You said that you discovered a further crack or another crack or a crack you hadn't seen before during the scarfing procedure; is that correct? A. That is correct, sir.

- Q. Would it have been feasible to do the scarfing before you began the metal lock work? That is to clean out the crack to see how far it will go? A. No, sir.
- Q. Why not? A. Because once you scarf the metal, it crystalizes and I have to drill and it will break your drill to drill through crystalized metal.
- Q. You prepared for us a drawing, I believe, Plaintiff's Exhibit 50. Have you had an opportunity to examine a

similar drawing, or let us call it a strongback drawing which might have been prepared by the chief engineer?

A. From the ship?

Q. No, recently. A. No, I never seen any.

Redirect Examination by Mr. Kritzalis:

[1061] Q. Mr. Van Cooten, under normal operating conditions, what I mean by that is no crack, vessel's machinery in perfect order and so forth, do you know whether the area depicted in Plaintiff's Exhibits 52, 52-A and 52-B would be exposed? A. No, sir.

Q. When you boarded the vessel on January 16, 1968 was the bearing cap in place on No. 3 main journal? A. I believe so, sir.

Mr. Kennedy: Objection, your Honor. This is not proper subject of redirect examination. There is no mention made at all of bearings on direct or cross. The Court: Overruled.

Q. Did you at any time have occasion to place asbestos over the main—

Mr. Kennedy: I object to the leading.

Mr. Kritzalis: May I address myself to that objection?

The Court: Overruled.

Q. I believe in response to Mr. Kennedy's cross-examination you mentioned that that could be asbestos seen on the—

The Court: Why don't you just ask him whether or not there was asbestos? That's not leading.

Mr. Kritzalis: Fine.

[1062] Q. At any time during the course of your work on the fractured web, did you place asbestos over the journal in the No. 3 main bearing? A. When I was doing the scarfing and welding on the end I did so.

Q. Before you were doing the scarfing and the welding, while you were working on other parts of the fractured web, did you have asbestos in place? A. No, sir.

Q. Why not? A. Because the shell and the bearing cap was in place. We had removed the shell later and put wooden shims underneath.

The Court: All right. Now, let me get that.
When did you have asbestos on the journal?
The Witness: When I started to work on the back side, sir.

The Court: On the face of the web by the journal? The Witness: Yes. sir.

The Court: Did you keep it on the whole time you were working on that side?

The Witness: Yes, sir.

The Court: How did you see the crack on the fillet? I guess the asbestos wasn't over the fillet; right?

The Witness: It was not over the fillet.

[1063]

Q. Going back a few days in time, why was the bearing cap in place while you were working on other parts of the

web? A. For many reasons. Because of the possibility of dirt, grinding, and the chips coming off the drill bits not falling in and scratching the surface of the journal, which is highly polished.

- Q. Was that pursuant to your instructions? A. Yes, sir.
- Q. When did you take the bearing cap off No. 3 main journal? A. When I decided to work on the back of the web.
- Q. I am not an expert, either, Mr. Van Cooten, and I may ask you what seems to you to be a foolish question.

What is the difference between scarfing and welding? I mean, the tools used, the implement used, if there is a difference. A. Yes, there is a difference, because welding, if you sit and weld it depends on the amount of weld that you apply can cause more heat than when you burn.

- Q. Do you use the same implement to do scarfing and to do weldings? [1064] A. No, sir. Welding you deposit the metal, that's welding; you deposit the molten metal.
- Q. What is the implement used to deposit the molten metal? A. By arc welding. Your arc is your diffusion body.
- Q. What about scarfing? A. Scarfing you blow away. You do use a high tension heat. However, you don't remain with the heat because you are blowing by.
- Q. When you were scarfing the crack as shown in Plaintiff's Exhibit 52, 52-A and 52-B, were you traveling with the implement? A. That is correct.
- Q. What implement do you use when you are scarfing?

 A. I use a cut thode.

Q. Before you got to the area that's shown in photographs, 52, 52-A and 52-B, was any of that main journal exposed to your vision? A. No.

Q. Was asbestos covering it? A. Prior to my commencing to putting the master lock here and doing the welding, the journal got exposed for me and I covered everything with asbestos.

Q. I see.

[1065] Now, talking about the area in these photographs, 52, 52-A and 52-B, at some point there must have been no asbestos there because you were— A. We removed this for dye-checking purposes.

Q. I see. A. For dye-checking purposes the asbestos was removed.

Q. Did you look at the journal? The journal itself, the polished surface, while you were scarfing? A. Yes.

Q. Did you see any crack, this crack moving in the direction of the arrow numbered 3 on Plaintiff's Exhibit 52? A. As the scarfing was taking place the crack was exposing itself to me.

Q. Did you see it there before you were scarfing? A. No.

Q. Do you have any opinion as to whether the crack that runs through the drilled hole as shown on Plaintiff's Exhibits 52, 52-A and 52-B was a surface crack? A. Well, surface crack would have stopped. When I drilled the hole, if it was just a surface crack it would have disappeared.

Q. How deep did you drill the hole again? A. I believe I went from four to six inches, sir.

Q. So the crack was still six inches deep? [1066] A. Yes, sir.

Q. Was it visible at the bottom of the hole? A. It was, sir.

Q. Why didn't you drill further than six inches? A. It was useless, sir.

Q. Could the heat emanating from your cut throde have, in your opinion, caused that crack which follows the arrow denoted 3 on Plaintiff's Exhibit 52? A. No way possible on this earth.

Q. Do you have any opinion on what might have happened if that crack which follows the arrow labeled with a 3 on Plaintiff's Exhibit 52 had not been found and strongback repairs had been successfully accomplished and the vessel sailed under her own power but on three instead of four cylinders?

Mr. Kennedy: Objection.
The Court: Overruled.

A. In my opinion, had this strongback repair been effected and this vessel loaded as she was had proceeded to any destination, regardless whether it be 10, 50, or 100 miles, I don't think it could have made it anywhere. It may not have been able to make ten revolutions. That's my opinion, seeing how deep the crack was after we drilled it. The crack looked to me like it was halfway around, and in [1067] that position where you have a massive piece and such force of this engine to move a fully loaded ship and maneuvering back and forth which would be disastrous had they attempted to crank that engine.

Recross Examination by Mr. Kennedy:

Q. Mr. Van Cooten, in view of your opinion, do you think that a more meaningful examination should have been made of the crank web before any—the crank web and shaft before any repairs were undertaken, temporary or otherwise? A. To be honest with you, sir, it would have been presumptuous to go looking around the web for other cracks.

[1072] I will look at Exhibit 56 in the meantime. All right, let's leave it this way: I will admit Exhibit 56 simply for the fact that it was sent from Mr. Callimanopoulos to Mr. Allen. Whatever relevance that has. But I am not admitting it to show the truth of the statements contained in it, I am not going to read it and consider it as proving any of the facts or opinions stated in that letter.

Now, let's leave it at that.

Mr. Kennedy: May I see the original?

The Court: So Exhibit 56 is received for that limited purpose.

Mr. Kritzalis: I have Plaintiff's Exhibit 60 which I would like to offer in evidence.

The Court: All right. Is there any objection?

Mr. Kennedy: Objection to hearsay.

The Court: I will receive it simply to show the [1073] fact of the letter being received by Hellenic Lines.

(Plaintiff's Exhibit 60 received in evidence.)

The Court: Is there anything else?

Mr. Kritzalis: Yes, sir.

Mr. Kennedy: I would object to Exhibit 61 unless it is offered to show the fact that it was received.

Mr. Kritzalis: I am offering Plaintiff's Exhibits 59 and 60. 59 is a telex—

The Court: Wait a minute now. We have already received 60.

Mr. Kritzalis: Yes, I am taking them out of order.

The Court: You are offering 59 and 61?

Mr. Kritzalis: Yes, sir.

The Court: All right, go ahead.

Any objection to 59?

Mr. Kennedy: My objection to 59 is hearsay, your Honor.

The Court: All right. May I see it?

Mr. Kritzalis: 59 is a telex sent by Mr. Allen to Hellenic—Mr. Allen in Port Sudan to Hellenic here in New York. It is dated January 26, 1968 (handing).

I would say, your Honor, with respect to Mr. Kennedy's hearsay objections on these telexes that I find [1074] them a little out of order since we have been putting in everything found in Hellenic's files no matter how remote, their having come from Hellenic's files.

The Court: That doesn't have anything to do with it. He has a right to waive a hearsay objection or he has a right to treat documents authored by Hellenic Lines as admissions of Hellenic Lines and put them in. At the same time he has a right to object

to other things he doesn't want in. That's standard practice.

Nov, let's look at Exhibit 59.

I will receive this just for the fact of it being sent from Allen to Callimanopoulos.

Can we solve Exhibit 61 in the same way? Mr. Kennedy: I believe so. May I see it?

The Court: None of these things will be received for the hearsay purpose and they won't be.

(Plaintiff's Exhibits 59 and 61 received in evidence.)

WILLIAM A. CARLSON, previously sworn, resumed the stand and testified further as follows:

[1075] Direct Examination by Mr. Kritzalis:

- Q. Do you know when the shipowner, the plaintiff shipowner in this case, declared general average? A. Well, the declaration of general average was sometime in February, as I recall. Or the latter part of January.
- Q. What options did he have in declaring a general average? A. The shipowner generally has the option to declare [1076] general average or not as he sees fit. When the expenditures in a general average are paid by the shipowner and not by cargo and where there are no cargo sacrifices involved. That is the case here where the expenditures made by the shipowner were port of refuge expenses and costs of temporary repairs and were not in any way

involved in any sacrifice to cargo. The shipowner quite frequently will assess the situation and if the expenses, his out-of-pocket expenses, are not too great he may choose to absorb the general average rather than to declare a formal general average and pursue cargo.

In this particular case, as I recall, there were over 700 cargo interests and that means that the average adjuster has to collect the data on the 700 bills of lading involved and chase this cargo wherever it may be located for general average security. In this particular case on the Hellenic Sailor the shipowner was in my opinion and in my discussions with Mr. Hennessy of Hellenic Lines, their insurance manager, they were trying to get a fix on what their expenses would be on this before they made a decision on whether to declare a general average.

[1082]

Q. You were present, were you not, this morning and after the luncheon recess during the course of Mr. Van Cooten's testimony? A. Yes, sir.

Q. Is that correct? A. Yes, I was.

Q. And you heard him? A. Yes, I did.

Q. With respect to the adjustment, Plaintiff's Exhibit 31, and the manner in which the average was adjusted and the expenditures incurred by the plaintiff shipowner apportioned among the vessel and cargo interests in this case, does your opinion as expressed on the plaintiff's case-inchief in the middle of last week change or is it different? I mean does it change or is it the same? A. No, my opinion is unchanged.

[1083] Q. Has your opinion changed—was your opinion the same in 1968 at the time that you first were asked to contact cargo and secure general average security and then proceed with the adjustment? A. Yes.

Q. What is the basis for your opinion that with respect to the kinds of repairs that were done at Port Sudan up to February 1, 1968 that those repairs and the detention expenses and so forth as set forth in the statement of general and particular average were properly apportioned by Despard International? A. Well, in accordance with the York-Antwerp Rules, lettered rules A and B, and the numbered rules 10, 11 and 14, and skipping back to a lettered rule F—

The Court: Rules A, B and F?

The Witness: That is correct. And 10, 11 and 14.

The Court: All right, go ahead.

A. I consider the expenses in this case to fall—I consider the expenses dealt with in this case insofar as the temporary repairs and the detention expense at Port Sudan to fall within the scope of these rules.

The Court: You are considering that all of the repairs were temporary repairs; is that right?

The Witness: Yes, sir, that was my consideration [1084] from the outset.

The Court: If you were to find that they were permanent repairs you would not include the cost of those permanent repairs, would you?

The Witness: The cost of permanent repairs, your Honor, is not a subject of allowance in general aver-

age in this particular case. There are instances where permanent repairs can be allowed in general average. That is only where there is sacrificial damages to the ship or cargo. We are dealing with the ship now.

The Court: We are not dealing with that here? The Witness: No, we are not. In this particular case if I were to find out or if I had known that these were permanent repairs at that time I would have been of a different mind. Now, that's only insofar as the repair costs are concerned. The detention expenses would still run against general average.

The Court: In other words, even if you characterize these as permanent repairs the cost of the waiting at the port, that's what you mean by detention?

The Witness: Yes, sir.

The Court: And going on to Bombay, would all that still be included?

The Witness: Yes, that's right, that would have been.

[1085] The Court: The vessel was towed to Bombay, of course, wasn't it?

Mr. Kennedy: Yes, sir.

The Witness: Yes.

The Court: What if you have an attempt at permanent repairs and it fails, then as a result of that failure there has to be a towage which would not have been necessary if the permanent repairs had been effected?

The Witness: Well, we are talking around this case right now. I mean we are taking the same physical circumstances that we have here?

The Court: Yes.

The Witness: And assuming that there was an attempt to make permanent repairs and they failed. Then under the York-Antwerp Rules I would have to refer, your answer will be found in either Rule 10 or 11. The cost of towage to a repair port would be covered. The cost of towage from Port Sudan to a permanent repair port would be subject to contribution in general average.

The Court: I guess this depends, though, on whether the owner was acting reasonably in trying the repairs that ultimately failed; is that right?

The Witness: That is correct. The reasonableness is the key.

[1086] The Court: In other words, if the owner acts reasonably and he tries something, whether it is permanent or temporary, and it fails, but he's acted reasonably throughout, then he has to have more towage to another port, he can get that towage, can't he?

The Witness: Yes, sir.

The Court: Now, what if the failure of the repairs is due to the negligence of the shipowner?

The Witness: Then he will end up in court.

The Court: Well, you don't get general average. I mean, if that's the finding.

The Witness: Yes, sir. The general average would be stated but then it would become a legal question as to where the liability will fall.

The Court: Well, if you assume that the repairs failed because of the negligence of the shipowner,

assume that, then you can't get general average for the consequences of that negligent failure, can he?

The Witness: Not from the cargo, he can't. The Court: Not from the cargo. All right.

Is there anything else?

Mr. Kritzalis: Yes, your Honor.

Q. I ask you to turn to page 56 of Plaintiff's Exhibit No. 31, Mr. Carlson. And I refer you to a note on the top [1087] of that page 56. I won't ask you to read the note aloud, but do you see the note that I am talking about? A. I do, yes.

Q. There are three notes on that page and I am talking about the note at the top, the top of the three notes. A.

Yes.

Q. Is that note the premise upon which the costs of repair at Port Sudan up through the time that those repairs were terminated was apportioned to cargo in this case?

A. That is correct.

Q. As between cargo and the vessel? A. That is correct.

Q. Is your opinion the same today? A. Yes, it is.

Mr. Kritzalis: No further questions.

.

[1144] What I thought I would do, and I don't know whether it's the best way or not, but I am going to try it. I am going to try to dictate a decision from the bench now, and I do not want to let the case sit and have it leave my mind and have to get back to it. I want to take advantage of the thought that I have given to it in the last few days, and so

I will put down my findings of fact and conclusions of law now the best way I can; this is as follows:

The Court: Plaintiff ship owner has sued various underwriters as general average grantors of cargo to recover contributions in general average arising out of fracture of the crankshaft of the motor vessel Hellenic Sailor on December 24, 1967, while the vessel was in the Red Sea en route from United States ports to ports in the Middle East and India. Defendants admit that they were general average underwriters of various cargos carried on board the motor vessel Hellenic Sailor, but deny liability to the plaintiff in general average.

Plaintiff has instituted two separate suits which have been consolidated for purposes of trial.

The legal basis of the general average obligation in this case rests initially on the bills of lading relating to the various items of cargo carried on the [1145] vessel. Each bill of lading incorporated what is known as the New Jason clause. This clause provides that the cargo interests will contribute with the carrier in general average in case of accidents and damage resulting from any cause for which, or for the consequences of which, the carrier is not responsible by statute, contract, or otherwise.

It is agreed that the only thing within the meaning of the phrase, "statute, contract, or otherwise," is the Carriage of Goods by Sea Act. It is further agreed that a reading of the New Jason clause in conjunction with the Carriage of Goods by Sea Act yields the following result:

If the crankshaft fracture is something for which Hellenic Lines would not be liable under COGSA then it may recover general average in this case. But if the crankshaft fracture is something for which Hellenic Lines would be liable under COGSA. then it may not recover in general average in this case. The relevant parts of COGSA are Sections 3 and 4. Section 3(1), 46 USC 1303(1), provides that the carrier shall be bound before and at the beginning of the voyage to exercise due diligence to make the ship seaworthy. Section 4(1), Title 46 USC 1304(1) provides that the carrier shall not be liable for loss [1146] for damage arising or resulting from unseaworthiness unless caused by want of due diligence on the part of the carrier to make the ship seaworthy in accordance with Section 3(1).

Section 4(1) further provides that whenever loss or damage has resulted from unseaworthiness, the burden of proving the exercise of due diligence shall be on the carrier. It is conceded that the losses involved in this case resulted from unseaworthiness, that is, a fractured crankshaft found on December 24, 1967. The fracture was found and manifested itself during the course of a voyage. The question to be resolved is whether Hellenic Lines has sustained its burden of proving that it exercised due diligence before and at the beginning of the voyage within the meaning of COGSA, Section 3(1).

I hold that Hellenic Lines has not done so.

I will deal briefly at this point with what constituted the beginning of the voyage. The vessel's final

port of call before leaving the United States for the Middle East and Asia was New York. The HELLENIC Sailor sailed from New York on November 19, 1967. However, in preparation for the voyage in question, the Hellenic Sailor had made other calls as follows: It [1147] arrived at Savannah, Georgia, on October 5, 1967, inbound on a voyage from foreign ports via Durban, South Africa. In Savannah it picked up a small amount of cargo for the new voyage. On October 7th the vessel left Savannah for Charleston and arrived in Charleston the same day, discharging cargo from the previous voyage. The vessel left Charleston on October 8th for New York where it arrived on October 10th. On October 16th the vessel went to the Bethlehem facility in Hoboken for its annual dry-docking. It did not load any cargo at New York or Hoboken at this time. It left the Bethlehem facility on October 21st and arrived at Philadelphia, where it discharged cargo from the previous voyage, and left the same day. The vessel arrived at New Orleans on October 27th and discharged some cargo from the previous voyage. Also, it was at New Orleans where the first substantial amount of cargo was loaded for the new voyage.

As already described, there was a small amount of cargo for the new voyage loaded at Savannah. At New Orleans the vessel loaded 2,763 metric tons of bulk soy bean oil destined for a port in India. In addition to the soy bean oil, a quantity of dry cargo was loaded at New Orleans.

The vessel left that city on October 31, 1967. [1148] After leaving New Orleans while in the Industrial

Canal into the Mississippi River, the vessel touched the bank of the canal. It is agreed in this case that this accident did not have a causal relation to the fracture of the crankshaft which occurred later, and I so find.

The vessel was in Houston on November 2nd through November 4th, discharging cargo from the previous voyage and loading cargo for the new voyage. The vessel was in Jacksonville on November 8th, loading cargo for the new voyage. The vessel was in Philadelphia from November 11th to November 13th, loading cargo for the new voyage. Finally, the vessel was in New York from November 14th to November 19th, loading cargo for the new voyage. On November 19th the vessel left New York for the Middle East and Asia.

I return to the question of what was the beginning of the voyage for the cargo loaded at the various points as described above.

Did the owner's obligation of diligence terminate at Savannah for the Savannah cargo, at New Orleans for the New Orleans cargo, and so forth? I hold to the contrary. The last port of call in the United States was New York. The general manager of Hellenic Lines was in New York. The marine superintender of Hellenic Lines the principal engineering officer of the company, was in [1149] New York. I hold that while the vessel was in New York it was under the control of the owner, rather than under the sole control of the master; if, as to any cargo, the voyage had commenced at a prior port, it was

effectively interrupted in New York when the vessel came under the owner's control. The owner had a diligence obligation at and prior to New York as to all cargo on this voyage, whether loaded in New York or not. The authority for this is the Supreme Court decision in the Isis, 290 US 333.

The following are my findings on the question of the owner's diligence. The vessel became disabled on December 24, 1967 in Red Sea. At that time it was found that the No. 2 after side rod crankshaft web was fractured. Let me make a brief description of the crankshaft of the vessel. Basically the crankshaft of the vessel consists of four large cranks connected together in a line. The whole crankshaft is 44 feet long and weighs 120 tons. Each crank is U-shaped. The legs of the U are massive metal members called webs, not the type of web which fractured, however, which will be described shortly. The head of the U is a cylindrical member called the bottom end pin. The bottom end pin is connected with a piston. The motion of the piston turns the crank.

The engine in the Hellenic Samor is a double-opposed engine. That is, each of the four cylinders for [1150] the four cranks has two pistons. One piston operates on the bottom end pin of the U-shaped crank as described above. Another piston operates on what are called side connecting rods. The side connecting rods run to the outsides of the U-shaped cranks, that is, the outside of the webs. These side connecting rods operated by the second

piston help to turn the crank. In order for the side connecting rods to operate on the webs, there are cylindrical members called side connecting rod pins extending out from the webs at the top of the U. That is at the opposite end of the U from the bottom end pin. The side connecting rods hook onto the side connecting rod pins.

The crankshaft rests on five supports called entablatures. One entablature is at the very front of the shaft, and the other four are behind each of the four cranks. The portions of the crankshaft resting on the entablatures are cylindrical members called journals. The journals revolve inside bearings called main bearings. There are five journals and five main bearings.

A minute ago, I described how each U-shaped crank was made, or is made up of the two large webs and a cylindrical pin inside the webs at the bottom of the U, and the side connecting rod pins extending out from the [1151] top of the U.

This brings us to the part of the shaft which was fractured. We are looking at a side view of the crankshaft. We will see these four U-shaped cranks. For each of these cranks, we will see the side connecting rod pin extending out from the after leg of the U, or the after web. Then, in each case, we will see a main bearing which has the journal inside of it. The part which fractured is a web smaller than the large webs of the cranks which connects the side connecting rod pin with the journal. Although I say this web connects the pin with the journal, the web

is a vertical member and, in appearance, is sandwiched in, so to speak, between the connecting rod pin and the journal. The journal, the small web and the connecting rod pin are one continuous forging. The dimensions of the small web are 6 feet by 4 feet by 1 foot. This web is called the after side rod web.

Plaintiff Hellenic Lines, in its case-in-chief, introduced no evidence as to the cause of the fracture. Hellenic Lines counsel stated that a number of metallurgists had investigated the matter and their findings were inconclusive. Counsel for Hellenic Lines took the position that it was not part of its burden of proof to show the precise cause of the fracture.

[1152] Defendants introduced expert testimony to the effect that the fracture of the web in question was a bending fracture resulting from excessive bending stress.

On its rebuttal case, Hellenic Lines introduced evidence that the fracture was the result of a fatigue crack followed by a mechanical fracture, that is, a fatigue crack about one-third of the way through the web followed by a sudden fracture, or instantaneous fracture at the time of the casualty called a mechanical fracture.

The evidence showed that the end result was that the web was severed all the way through, except for a small amount of metal intact on one edge.

As to the subject of causation, plaintiff's evidence and defendant's evidence, as finally developed, are not inconsistent. A bending fracture can start with a fatigue crack. I find as a fact that the fracture

was the result of a fatigue crack occurring over some period of time, followed by a sudden rupture of the rest of the web at the time of the casualty. I further find that this was all due to a bending stress on the web. There is no evidence that the fatigue crack started on any visible surface or was visible at or before the vessel departed from New York.

We had better take a short recess.

[1153] (Recess.)

The Court: The subject of bending stress brings us to the subject of the shaft alignment which was the subject of very substantial proof in this case. It appears that the shaft alignment in a ship under operating circumstances is never perfect, that is, it is never running perfectly around a horizontal axis.

The crankshaft of a vessel such as the Hellenic Sailor inevitably shows some sag or some hog. Sag means that the crankshaft is bending slightly downward; hog means that the crankshaft is bending slightly upward. If a deflection from the true horizontal is too great, this deflection can cause a bending stress. For instance, an excessive sag will cause the large webs in the cranks to flex in and out as the shaft turns. This will transmit a force through the connecting rod pin to the adjacent side rod web and will cause that web to bend back and forth.

As already noted, it was such a side rod web which fractured in this case. I find that the probable cause

of the fracture of the side rod web was the flexing of the nearby large crankshaft web, which transmitted a bending stress to the side rod web. Let me now describe how shaft alignment—sag or hog—is measured.

[1154] Shaft alignment is measured along the tops of the five journals. No. 1 journal at the front end of the crankshaft and No. 5 journal at the after end of the crankshaft furnish the points from which the measurements are taken. The most common method of measuring crankshaft alignment on a vessel such as the Hellenic Sailor is stretch a wire from a position at the No. 1 journal to a position at the No. 5 journal. This permits the establishment of a reference line between the top of the No. 1 journal and the top of the No. 5 journal. And the measurements are to determine how much the tops of the Nos. 2, 3 and 4 journals fall beneath that reference line, or to determine how much they rise above that reference line. If they fall beneath the reference line, then the crankshaft is in a sagged position; if above the crankshaft is in a hogged position. The results are measured in one-thousandths of an inch.

The amounts of sag and hog are, to a layman, usually very tiny, but this does not indicate, and cannot [1155] indicate, the extent of any problem caused by the type of deflection that may be involved.

Another type of measurement which has been spoken of in the case is called web deflection measurement. Basically, this is a measurement of how

much the large webs in the cranks flex as they turn through their rotating cycle. The method of measurement is to simply measure the distance between the two bottoms of the U, that is, the two large webs, the distance inside the U. This distance is measured at four points in the turning cycle, and the differences in those measurements will measure the web deflection. Again, the readings are in thousandths of an inch.

On October 11, 1967, while the vessel was in New York City, a wire gauge reading of crankshaft alignment was taken by a firm known as Golten Marine. At this time the draft of the vessel was 12 feet 6 inches forward, and 22 feet 10 inches aft. The reading showed a sag of 32/1000ths of an inch at No. 4 main bearing, 42/1000ths of an inch at No. 3 main bearing, and 32/1000ths of an inch at No. 2 main bearing.

I do not believe I have previously noted that the web which fractured in this case was immediately forward of No. 3 main bearing.

[1156] So it was at the greatest point of sag according to the October 11, 1967 reading.

Plaintiff's evidence is that the October 11th readings were immediately reported to Harry Petsis who was then assistant to the marine superintendent of Hellenic Lines. According to plaintiff's evidence, Mr. Petsis asked Golten Marine's opinion, and the representative of Golten Marine said that the readings were satisfactory and that no work on the crankshaft was needed. At the time of the October 11th

readings, the marine superintendent of Hellenic Lines, Charles Allen, was on vacation. When he returned he received the readings of October 11th and wrote a letter dated November 6, 1967 to Mr. Evangelou, the chief engineer of the Hellenic Sailor. This letter of November 6th is Plaintiff's Exhibit 26 in evidence. Let me quote the letter:

"Enclosed herewith please find your file copy of Pilgrim wire readings as taken while your ship was at our port. Please note the position of the crankshaft with Nos. 2, 3 and 4 below the zero line. It is important to observe ship's draft while the readings were taken, and with 12 feet 6 inches forward, the ship would be in a comparatively light condition, causing the deflection to be below the zero line, although the figures show an access [1157] over the desirable measurements. We will take further readings at the next available opportunity with the ship in both loaded and light condition."

The word "access" in the letter is an obvious typographical error, and I find that Mr. Allen actually meant to say that the figures show an excess over the desirable measurements.

Mr. Allen has testified in his deposition that his concern in connection with the October 11th readings, and in connection with writing this letter, was that the readings were somewhat greater than they should have been, and also that the difference in draft between the draft for and the draft aft was such as to possibly make the October 11th readings inac-

curate and less meaningful than required. There is evidence indicating that inaccuracies and distortions in crankshaft alignment readings can be caused unless the trim of the ship, or the difference in draft between the draft fore and the draft aft is about 3 feet or less.

The chief engineer of the Hellenic Sailor, Mr. Evangelou, has testified that he took shaft alignment readings at Philadelphia on November 13, 1967 in response to this letter. By this time, the vessel was closer to being fully loaded than it had been on October 11th. Mr. Evangelou has estimated that at the time of the Philadelphia readings on November 13th the draft of the ship was [1158] 24 feet 6 inches forward and 26 feet 3 inches aft.

The evidence in this case is that in a loaded condition one would expect the vessel to go from a sag to a hog. The ship's log shows, or has a notation, that an alignment reading was taken on November 13th. Mr. Evangelou testified that a document marked as Plaintiff's Exhibit 25 showed the Philadelphia reading. Plaintiff's Exhibit 25 records a sag of 35/1000ths of an inch at No. 4 bearing, a sag of 21/1000ths of an inch at No. 3 bearing, and a sag 23/1000ths of an inch at No. bearing. As a result of analysis of the document marked Exhibit 25, it appeared seriously doubtful as to whether Plaintiff's Exhibit 25 could be a reading taken at Philadelphia on November 13th. Following this analysis,

Blank in the original. Should be "No. 2 bearing."

plaintiff has advised the Court that it does not contend that Plaintiff's Exhibit 25 reflects readings taken at Philadelphia.

The result is that, on the present record, there is no direct evidence whatever as to what the results were of the Philadelphia alignment readings or what those readings actually were. To compensate for this situation, plaintiff has introduced expert testimony, in the form of an opinion, that the readings taken in Philadelphia must have been the same as certain readings taken later after the crankshaft fracture had manifested itself. The latter [1159] readings were taken February 3, 1968 and showed a sag of 16/1000ths of an inch at No. 4 bearing, 26/1000ths of an inch at No. 3 bearing, and 17/1000ths of an inch at No. 2 bearing.

I reject the opinion that the February 3rd readings can be taken to reflect any Philadelphia readings of November 13th. Mr. Allen has testified in his deposition that the readings would not be the same, that the February 3rd readings would be different because of the fact that by that time the crankshaft fracture had manifested itself.

To summarize once more, the present record with respect to crankshaft alignment readings immediately before the departure of the vessel for the Middle East and Asia is as follows:

Readings were taken in New York on October 11th which the marine superintendent of Hellenic Lines stated were in excess over the desirable measure-

ments, and which the marine superintendent believed were possibly inaccurate because of the problem with the ship's draft. The marine superintendent requested further readings. There is evidence that further readings were taken on November 13th. There is no evidence whatever as to what was found in those further readings, as to whether [1160] they indicated a dangerous condition, or what condition with respect to that ship and with respect to the October 11th readings.

This situation alone would mean, in my view, that Hellenic Lines has not sustained its burden of proof of showing due diligence with respect to the crankshaft prior to the vessel leaving for the Middle East on November 19th.

Mr. Golten, the head of Golten Marine, has testified at the trial that the October 11th readings were perfectly satisfactory. He has testified that they were, in his view, "dream readings." His associate, Mr. Haugestadt, has testified that these readings were satisfactory. Mr. Smith, formerly of Sun Shipbuilding, the company who built the Hellenic Sailor, has also testified that they were within operational tolerances. But the trouble is that there are no real objective operational tolerances against which to measure the readings which were taken. The manufacturer of the vessel, Sun Shipbuilding, did not publish or give out, according to the record in this case, any operational tolerances for crankshaft sag or hog. As far as the record in this case showed, the question

of how much sag or how much hog would be permitted was a matter for the sound judgment of the people responsible for [1161] the vessel.

The record shows that the marine superintendent of Hellenic Lines, in his sound judgment, was concerned about the October 11th readings, both what they showed in terms of sag and whether they were, in fact, accurate.

The evidence further shows, as has already been described, that we have no information as to the results of the follow-up which the marine superintendent requested.

One telling point, in my view, is the admission by plaintiff's expert, Mr. Golten, that a subsequent reading to the reading of October 11th would have made this situation clearer and the two readings would have been more meaningful than the single reading.

The Court: Off the record.

(Discussion off the record.)

The Court: We will recess for lunch until 2:15.

(Luncheon recess; time noted: 1:10 p. m.)

[1162]

AFTERNOON SESSION

2:30 p.m.

The Court: Let me make one correction. I believe I said in the earlier part of this statement that Mr. Allen was on vacation at the time of the October 11th reading. I believe the record is that he was on vacation from October 16th to October 30th.

In any event, there is no evidence of any action taken by Mr. Allen before his November 6th letter with respect to this matter.

I want to elaborate a little further regarding Mr. Allen's judgment when he wrote the November 6th letter. Mr. Allen, of course, was not called as a live witness in the trial. His testimony is in evidence through his deposition taken in August 1973. Hellenic Lines has argued that little significance should be attributed to the statement in his letter that the October 11th figures show an excess over the desirable measurements. I do not wish to give excessive significance to those words, but I do not believe I am doing so when I hold, as I do, that they indicate to me a judgment on the part of Mr. Allen that the October 11th readings were cause for concern from an operational standpoint.

In his deposition taken in August 1973, Mr. Allen [1163] testified specifically in response to a question from defense counsel that the October 11th readings were a little bit greater than they should have been.

Some indication of Mr. Allen's judgment with regard to permissible limits of alignment deflection is found in another portion of his deposition where he was asked about a situation on another ship where there was a sag of 46/1000ths. As already described, the sag at No. 3 bearing shown in the October 11th reading for the Hellenic Sailor was 42/1000ths. With respect to this other situation of the 46/1000ths sag, Mr. Allen agreed in his deposition that the

owner of that ship wisely corrected the discrepancy at an early date.

Mr. Allen also commented at another point in his deposition about a range in the sag at No. 3 bearing on the Hellenic Sailor from a reading in August 1966 of 16/1000ths to the October 11, 1967 reading of 42/1000ths. Although Mr. Allen's deposition at this point is a little difficult to interpret, upon some study I believe that it clearly states that in his view this range is unacceptable.

This raises the subject of the trend of alignment readings taken over a period of years on the Hellenic Sailor. The bearings for the Hellenic Sailor crankshaft [1164] were renewed in the fall of 1962. Shaft alignment readings were taken immediately thereafter, but these readings apparently cannot be found. The record does show the following readings at subsequent dates:

On November 20, 1963, about a year after the bearings were renewed, the shaft in the vessel at the time it was fully loaded showed a sag at No. 3 bearing of 7/1000ths of an inch. The reading at No. 3 bearing on September 8, 1964, when the vessel was in a lightly loaded condition was 8/1000ths of an inch sag. The reading on February 1, 1966 at No. 3 bearing when the vessel was lightly loaded with a large differential between the draft fore and the draft aft was a sag of 38/1000ths of an inch. The reading on August 2, 1966 at No. 3 bearing when the vessel was lightly loaded with a large differential in the trim was a sag of 16/1000ths of an inch.

As already noted several times, the reading on October 11, 1966 at No. 3 bearing with the vessel lightly loaded and with a large differential between the draft fore and the draft aft was a sag of 42/1000ths of an inch.

Defendant's expert, Mr. Bates, has commented that there is a trend shown by these readings to a greater and greater sag, and that this trend should have been sufficient to cause concern. I find Mr. Bates' views in [1165] this regard reasonable. In my view, it is clearly reasonable to consider the entire trend and not to rely solely on the isolated October 11, 1967 reading. This is not, surely, a matter of pure hindsight. We must infer that Mr. Allen and other responsible persons at Hellenic Lines had in mind the trend of prior readings. They either had this trend in mind or should have.

I should note at this point that although the evidence is that in a loaded condition a hog is to be expected in the crankshaft, there is not in evidence a single reading since the renewal of the bearings in 1962 which shows a hog condition at No. 3 bearing. Presumably, the vessel was fully loaded on many instances during those years. The only hog shown by any of the readings in evidence since the time of the renewal of the bearings occurred on November 20, 1963. At this time a reading was taken with the vessel in an almost fully loaded condition. The reading showed a hog of 3/1000ths of an inch at No. 4 bearing, a sag of 7/1000ths of an inch at No. 2 bearing, and a hog of 2/1000ths of an inch at No. 2 bear-

ing. Thus there is a hogged condition at the two bearings on either side of No. 3 and a sagged condition at No. 3. According to the evidence in the trial, this would present a kind of zigzag or dogleg situation which [1166] has its own problems, apparently.

In any event, there is no evidence of a reading showing a hogged condition at No. 3 at any time since the renewal of the bearings in 1962.

I would like now to briefly discuss the other kind of measurement referred to earlier in my statement. That is the measurement of the web deflection. As already indicated, in my view, the probable, if not the certain cause of the fracture of the side web in question was the flexing of the adjacent large web which created a bending stress.

Plaintiff's experts, Messrs. Golten, Smith and Haughestadt, have all testified at the trial to the effect that web deflection readings are not taken in an engine of this type. To recapitulate, Messrs. Golten and Haughestadt are associated with Golten Marine, a company which has long experience in measuring and repairing crankshafts. Mr. Smith has retired from Sun Shipbuilding but had a long career at that company in connection with the building of engines and crankshafts. I should note at this point that the engine in question is called a Sun Doxford engine.

The original design of the original type of engine was by the Doxford Company in England. Sun Shipbuilding [1167] took a license from Doxford and built engines with some modifications from the English Doxford.

I believe that there is some possible ambiguity in the testimony of Messrs. Golten, Smith and Haugestadt. There are two possible uses for a web deflection reading. One use would be to use the web deflection reading in order to measure crankshaft alignment. Another possible use for a web deflection reading is to measure web deflection for its own sake without converting it. or converting such measurements into figures for the hog and sag of the crankshaft as a whole. It is possible, in my view, that one or more of plaintiff's experts really meant to testify that on a Sun Doxford engine one would not use web deflection readings to derive crankshaft alignment readings. It is possible that these witnesses did not mean to say that a web deflection reading would be of no use in order to determine web deflection for its own sake. But for the purpose of this opinion I will interpret their testimony to mean that web deflection readings on a Sun Doxford engine are not necessary or useful for any purpose, and that all the necessary, meaningful information can be obtained from a wire gauge reading of crankshaft alignment; and that whatever needs to be known about web deflection can be derived from such [1168] wire gauge readings.

There are still several problems with the view as I have just stated. Let me note that this interpretation of the experts' testimony is that which plaintiff's counsel urges upon the Court. As I say, I am accepting that view for the purposes of this opinion. Nevertheless, as I have also said, there are several problems with this view.

First, in connection with bending stresses, the matter of web deflection as an independent measurement, apart from crankshaft alignment, is in and of itself a matter of prime concern, because the web deflection is the thing which sets up the bending moment on the adjacent parts, such as the small web which cracked in this case.

The question obviously arises, why should not web deflection be measured directly rather than have it calculated from another measurement, namely, crankshaft alignment? Mr. Golten said that web deflection could be figured out from crankshaft alignment, but the question is why not measure it directly? Beyond this, contrary to the position taken by Hellenic Lines in court, Mr. Allen has testified in his deposition that web deflection readings in and of themselves are essential. He has testified that the purpose of these readings is to insure that the deflection of the webs is not too great [1169] due to possible misalignment. He has further testified that on the Hellenic Line's vessels, the chief engineers of such vessels took web deflection readings almost every voyage. He has testified that they would be recorded and records kept on the vessels. He has further testified that he would not learn the results of the web deflection readings unless there was something abnormal.

Finally, I refer to a letter from Sun Shipbuilding & Drydocking to the American Bureau of Shipping dated September 14, 1960, a copy of which went to

Hellenic Lines and comes from their files. The final paragraph of this letter states as follows:

"We enclose one copy of Enclosure 'A' showing recommended deflections of crank webs when jacking over with the turning gear."

Enclosure "A" shows a schematic clearly indicating how to take web deflection measurements and giving recommended tolerances for such web deflections.

The record further shows that on the Hellenic Sailor web deflection readings were made on October 31, 1960, November 23, 1960 and September 1962. However, there is no record regarding any web deflection readings which has been produced regarding any dates since September 1962. I find that, at the very least, the plaintiff has failed [1170] to sustain its burden of proof in connection with its assertion that it did not need to take web deflection readings at or near the time the voyage in question commenced. Plaintiff has not, in my view, satisfactorily explained the absence of any specific information regarding such readings or the results thereof following September 1962, a time some five years before the casualty in question.

For these reasons, plaintiff's complaint seeking general average against the defendants must be dismissed. This applies to both actions, 71 Civil 2865 and 71 Civil 3221.

Although this opinion which I have just expressed makes academic the defendants' objections to specific

items of general average, I would like to comment briefly on the defendants' contention in this regard and make certain brief findings.

Judging from the trial brief of the defendants, the only remaining contentions about specific items of general average are that certain repairs undertaken in the first port of refuge, namely, Port Sudan, were improvident and were negligently carried out, causing further damage. I find against the defendants on both these points.

To summarize briefly, I find that the marine [1171] superintendent, Mr. Allen, proposed a temporary repair at Port Sudan consisting of a strong back intended to hold the fractured web together while the vessel proceeded to a port where permanent repairs could be effected. The idea was that the connecting rods for the crankshaft above this web would be disconnected, the vessel would run on three out of the four cylinders at slow speed, and could thus navigate to another port. Mr. Allen traveled to the Middle East to supervise and undertake this strong back repair.

In the meantime, the general manager of Hellenic Lines consulted with a metal repair expert in New York City and received an opinion that the strong back repair presented serious dangers to the safety of the vessel, in that, among other things, the strong back would create substantial imbalance in the crankshaft. This expert recommended a different kind of repair called a metal lock repair.

There is a great deal of evidence about the details of both kinds of repairs, but the important thing, in my view, is that the general manager of Hellenic Lines exercised a judgment that the strong back repair should not be undertaken, and that the metal lock repair should be. In my view, the judgment of the general manager [1172] in this regard has not been shown to be unreasonable. In my view it was a reasonable judgment.

The metal repair expert consulted by the general manager was dispatched to Port Sudan. This man's name is Van Cooten; he testified at the trial. He testified that he attempted to make the metal lock repair and that during the course of the repair a certain amount of welding had to be done. When the repair was mostly complete, he saw for the first time evidence of a crack in the journal, which was adjacent and ran into the cracked web in question.

This incident occurred on February 1, 1968. Mr. Van Cooten had arrived in Port Sudan sometime in January 1968. Mr. Van Cooten's metal lock project halted immediately, the crack in the journal was probed with a drill and found to be 6 inches or more deep. Mr. Van Cooten voiced the opinion that the crack in the journal was not caused by any of his work, heating, welding, or otherwise. He voiced the opinion that the depth of the crack in the journal indicated that it had been a crack which accompanied and was caused by the crack in the adjacent web. There is evidence to the contrary. Both Mr. Allen and Chief Engineer Evangelou have testified that,

in their view, the crack in the journal was caused by the [1173] heating and welding conducted by Mr. Van Cooten.

In my opinion, the testimony of Mr. Van Cooten at this point is more precise and detailed and appears to me to be probably the more correct view of the situation. For these reasons, I find that the decisions regarding repairs taken by the general manager of Hellenic Lines were reasonable. I find that there is insufficient proof of any negligence in the course of the repairs by Mr. Van Cooten or otherwise, and I find that the crack in the journal had been caused by the crack in the web, or had accompanied the crack in the web, rather than being caused by Mr. Van Cooten's work or any other repair work at Port Sudan.

One other contention in this regard made by the defendants should be noted. During the trial, defense counsel indicated that maybe there was negligence on the part of the vessel personnel at Port Sudan in not discovering the crack in the journal earlier. I am not certain of the significance of this contention, but, in any event, it seems to me that there is no evidence that the crack in the journal manifested itself until it was discovered by Mr. Van Cooten at the final stages of his repairs. The progress of this kind of crack and how and when such cracks become visible are certainly not [1174] entirely clear on the record in this case, but I do not believe there is sufficient evidence of any negligence on the part of the personnel at Port Sudan in not discovering the journal crack earlier than they did.

My conclusion is as already stated, that the complaints of Hellenic Lines for a general average should be dismissed. However, I have gone on to make findings regarding the Port Sudan repairs for whatever use they may be in connection with any

Appellate review.

As to the latter question, it follows from the findings I have made above that, in the event Hellenic Lines were to be found on appeal to be entitled to general average and to have exercised due diligence prior to the departure from New York, I would hold that it would be entitled to whatever general average would be due without recognizing the contentions of the defendants as to improvident and negligent repairs.

That concludes my statement.

Mr. Kritzalis: Thank you, your Honor.

Deposition of Charles Allan Taken by Defendants on August 22, 23, 24 and 27, 1973.

[3]

Charles Allan, having been first duly sworn by a Notary Public of the State of New York, was examined and testified as follows:

Direct Examination by Mr. Kennedy:

- Q. Mr. Allan, for the record, may I have your full name and address? A. Charles Allan, A-l-l-a-n.
- Q. And your address, sir? A. 9110 Ridge Boulevard, Brooklyn, New York 11219.
- Q. Sir, do you maintain any other address, mailing address? [4] A. No.
 - Q. Are you presently employed? A. No.
 - Q. Would you tell me, please-

Mr. Kritzalis: May I say something for the record here?

Mr. Allan is no longer with Hellenic Lines, and although the notice of deposition pursuant to which Mr. Allan's testimony is being taken calls for the testimony of the plaintiff by a number of persons, including Mr. Allan, Mr. Allan has volunteered to come in and assist all concerned in this case, and make himself available for as long as reasonably needed. But he is no longer under the control of Hellenic Lines or an employee of Hellenic Lines.

By Mr. Kennedy:

Q. Sir, I take it that during the years 1967, 1968 and possibly 1969 you were employed by the plaintiff, Hellenic Lines Limited? A. Until 1970.

Q. Until 1970.

When did you first join Hellenic Lines? [5] A. In 1951.

Q. And in what capacity were you employed in 1951?

A. Port engineer.

Q. Was that at a particular port? A. New York.

But I have to explain something there.

Q. Sure. A. Mr. Callimanopulos owned five American flag ships at the time, it was called the Transfuel Corporation. And I worked for both companies.

Q. The Mr. Callimanopulos you refer to is the general manager of Hellenic Lines? A. Yes, the general manager.

Q. Mr. Allan, for how long were you employed by Hellenic Lines as a port engineer at New York? A. 20 years.

Q. I take it, then, that during the entire period of your employment with Hellenic you were a port engineer? A. Yes.

Q. Would you tell me the duties of a port engineer? [6] A. To take care of the maintenance of the ships. And I also had to attend trials and deliveries of new ships at various shipyards.

Q. Is there any one individual in the Hellenic Lines company that you were responsible to? A. Only the general manager, Mr. Callimanopulos.

[7]

Q. Do you have any idea as to how many vessels Hellenic Lines owned in the year 1967? A. I believe it was—approximately?

Q. Approximately. A. 30.

Q. And were these vessels cargo ships as opposed to passenger ships? A. All cargo ships.

Q. And it was your duty to oversee the maintenance of these ships? A. Yes.

[10]

Q. Do all vessels with engines amidships have the same characteristic in the main engine crankshaft, and that is when in ballast, that is, when the vessel is in ballast, the shaft tends to sag [11] A. Yes.

Q. Is there any special characteristic in such engines, that is, engines located amidships, which cause the crankshaft to hog when the vessel is fully loaded? A. Yes. The weight of the cargo in the forward holds and the weight of the cargo in the after holds is greater than the weight, proportionately greater than the weight of the engine in the center, and the ship being a girder in itself, bends, in this position of the weights.

Q. So that in a fully loaded ship, having an engine amidships, one would expect to find a hog rather than a sag in the crankshaft? A. Yes.

Q. Do the builders of the engines that I have just referred to, that is, amidship engines, issue instructions or regulations or recommendations concerning the permissible sag or the permissible hog in crankshaft which one might permit or allow in the operation of such a crankshaft? A. Not to my knowledge.

[14]

Q. But when the engine is in a ship, especially amidships, there is a tendency to have the shaft sag because of the engine's weight, is that correct? A. That's correct.

Q. Isn't it true that when you load the ship to its let's say expected cargo capacity or desirable cargo capacity—A. You mean the maximum draft?

Q. All right. If you wish maximum draft.

When this is done, is it desirable also to effect a zero deflection in the shaft? A. Naturally we try to get as close to the zero as possible. But it is not possible to take the—remetal A.

all the bearings out and remodel them every time the ship is light and loaded. So we have to strike a medium. And the usual method of course is to have a slight sag in the shaft when the ship is light.

[15] When you fully loaded the ship, is it desirable to have the shaft at a zero departure from— A. Well, no, it is not possible.

Q. It is not possible? A. No.

Q. Is it desirable, though? A. It's desirable to have it on zero all the time.

Q. I did ask you concerning maximum departures from zero.

Did you at any time come to a conclusion as to what those maximums should be? A. No.

Q. For the purposes of simplicity, I am referring [16] now to the four ships in question. A. Yes.

Q. The two Sun Doxfords and the two British Doxfords. A. This is totally different with the other type of engine, of course.

Q. Which other type? A. Without the opposed pistons.

[&]quot;A" is Allan's initial upon correcting and signing transcript.

Q. So that my question is related to Doxford engines—A. Opposed piston engines.

[17]

Q. Have you had an opportunity, a recent opportunity records A.

that is, to review the alignment and deflection errors as maintained by Hellenic Lines for the Hellenic Sailor during the period 1959 through 1967? A. In the limited time that I had, I did review them cursorily.

Q. Casually?

Mr. Kritzalis: Cursorily.

A. Casually I mean.

Q. And do you have an opinion as to whether the alignments or deflection, the alignment or deflection [18] readings that you saw conformed to that which would allow—conforms to that which would allow safe operation of the—A. Yes.

Q. -engine? A. Yes.

[34]

The Witness: We must bear in mind that the ship was almost fully loaded, ready for departure, and that the only way to alter these readings would be remetal A*

to remove all the bearings and remodel them, which would take about two weeks.

^{*} A is Allan's initial upon correcting and signing transcript.

By Mr. Kennedy:

Q. Is it a fair statement then to say that in April of 1959, when the Hellenic Sailor was fully loaded, the shaft would be expected to have both a sag and a hog? A. No. It would be expected to have a hog.

Q. A hog.

Do you know why it also had a sag on this particular occasion? [35] A. No.

Well, the bearing, No. 2 bearing, was low.

Q. When you say the ship was fully loaded, were you—did you have in mind that the forward draft on Defendants' Exhibit 22 [DEFENDANTS' EXHIBIT AE, IN EVIDENCE] is shown to be 23 feet, five inches? And the after draft is shown to be 24 feet, two inches?

(Question read.)

A. I don't know if it was fully loaded, because I can't remember the fully loaded draft in that ship. But it was approaching full load.

Q. And when you say it was approaching full load, you have in mind the drafts that are shown on the document?

A. Yes.

Q. Isn't that correct? A. Yes.

[36] Q. A little earlier, Mr. Allan, either you or I or perhaps both of us referred to web deflections. A. Yes.

Q. Do you know whether web deflections would in any way affect the alignment of the crankshaft? A. No. In this particular instance it wouldn't.

^{*} Deposition exhibits received into evidence at trial are so noted on transcripts and are hereinafter noted in bracketed bold type.

- Q. When you say, "in this particular instance," what particular instance are you referring to? A. In the Sun Doxford engine.
 - Q. Oh, in a Sun Doxford engine. A. Yes.
- Q. Is there a— A. Excuse me. That is within limits, of course; within limits.
- Q. When you say "within limits," do you know what these limits are? A. No. There is no particular limit. Because it is—you have an unavoidable deflection when the engine is running.
- Q. The deflection you are referring to now is a deflection in the web alignment. A. Yes. And it is taken when the engine is stopped, of course.
- [37] Q. Under some circumstances, might the web deflection adversely affect the crankshaft alignment? A. Yes, it could.
- Q. And under what circumstances would it? A. It it was too great.
- Q. By "too great," are you talking about a departure from zero? A. Yes.
 - Q. Deflection? A. Yes.
- Q. Do you know how high numerically one would have to depart from zero? A. Well, I would like to quote something I heard, some information I received from Sun Shipyard where the engine was built. They found the deflections were too, you know, too great, that they thought was inacceptable.
- Q. These are the web deflections? A. The web deflections. And they operated the engine at full load on the test bed, and took the deflections while the engine was running. And they found them to be more than in—in excess of one-eighth of an inch, with the engine running on full load. That is on a [38] center crank.

Q. Are you referring to the Hellenic Sailor Sun Doxford engine now? A. Yes. This was in Chester, Pennsylvania.

Q. And when was this test run? A. It must be 1939 or before.

Q. At about the time it was built? A. Yes. It was in the shop.

Q. And they found that the deflection at the center web or near the center web, is it? A. Between the two center webs.

Q. Between the two center webs. Was in excess of one-eighth of an inch? A. Yes.

Q. And? A. That would be .125 of an inch. In excess of that.

Q. And they reported that this deflection was permissible? A. Well, they consulted the original builders in England, and they told them that what was the purpose of the spherical bearings. You remember the spherical bearings—this is the bearing upside down.

[39]

Q. Did I understand you to say earlier that you saw a report concerning this operation and the finding [40] that the shaft rotated with a web deflection of, oh, in excess of one-eighth of an inch? A. I said that with the engine running full load on the test bed.

Q. Did you see such a report? A. No. I was told that by the head engineer in Sun Shipyard.

Q. When did he tell you this? A. 1962, I believe. Yes, 1960.

Q. In 1960? A. Yes.

Q. You have just taken a small notebook out of your bag— A. That was—

- Q. —which is marked 1960. A. I remember it was before I went to Genoa.
- Q. Did you use the notebook to refresh your recollection? A. No. The dimension I gave you?
 - Q. Yes. A. No.
- Q. There is a slip of paper in that notebook, [41] protruding from that notebook. A. Genoa.
- Q. What prompted you to discuss or to ask or confer with Sun Doxford people concerning the crank web deflections, in the Sun Doxford engine? A. Because at first we thought that the deflection was excessive. A static deflection.
- Q. What was the deflection that you thought was excessive? A. I believe it was probably about .020, approximately.
 - Q. .020? A. Of an inch.
 - Q. Of an inch.

Mr. Kritzalis: Could we have the name of the man you talked to, if you have it?

The Witness: I don't, I remember the man, and I—his name started with Mac, MacPhearson or something like that. He is now retired. But he is still in Chester.

- Q. You had a deflection of .020? A. You asked me for an approximation. I am just going from memory.
- [42] Q. Approximately. Which you thought might be excessive. A. Yes.
- Q. And you consulted with Sun Doxford? A. With Sun Doxford.

[43]

Q. You said you may have spoken with a Mr. Mac something? A. Yes.

Q. Would it have been a Mr. Mylrea? A. No. It was

Q. Mac? A. Yes.

[46]

Q. Sir, I hand you two documents which appear to contain language in Italian, but they also contain numerical readings of some sort.

Can you identify these two documents? A. Yes.

Q. Of the two, do you know which was prepared earlier?

A. I believe they were both prepared at the same time.

Q. All right. Thank you. A. One is the crankshaft and the other is the [47] cross heads.

Q. Which of the two refers to the crankshaft? A. Manovella is Italian for crankshaft.

Mr. Kennedy: Would you please mark the document just referred to by the witness as defendants' next exhibit.

(Document containing the word "manovella," above referred to, marked Defendants' Exhibit 24 [DEFENDANTS' EXHIBIT V, IN EVIDENCE] for identification, as of this date.)

Mr. Kritzalis: For the record, I would also indicate that that document comes from File No. 49 of the Hellenic Sailor engineering file, which is the main engine crankshaft file.

By Mr. Kennedy:

- Q. Is there more than one crankshaft reading on this document? A. There is a crankshaft deflection. Excuse me. The crank web deflection.
 - Q. There is a crank web deflection? A. Yes.
- Q. Anything else show? A. And there is a crankshaft alignment, it appears to be, I don't know, I don't remember.
- [48] Q. Do the crankshaft alignment readings appear at the top of the exhibit? A. Yes.

2. 18 A°

- Q. Under heading 2, I see the numerals, to, 18. A. Yes.
- Q. Is that a centimeter reading? A. That is a millimeter.
- Q. Millimeter.

You have just made some notes. Do you know what that figure converts to? A. I converted the millimeters to inches. It is .098.

Q. As a result of—

Mr. Kritzalis: Off the record.

(Discussion off the record.)

Q. Would you convert all of the reading at the top of the page!

Mr. Kritzalis: Specifically the ones that, 4 and 3.

The Witness: 4 and 3.

Can I write on this?

Mr. Kritzalis: No. Preferably do the notes on your sheet of paper.

^{*} A is Allan's initial upon correcting and signing transcript.

[49] A. No. 4 is approximately .040.

No. 3 is approximately .075.

Q. Do you know whether the company that prepared this document thereafter adjusted the crankshaft alignment? A. Yes, they did.

[53]

Q. I show you the document which you were unable to identify accurately earlier, specifically referring you to the bottom of the page, and ask if this document helps you to refresh your recollection as to the extent to which the crankshaft web deflection was adjusted. A. Yes. The lower shells of the main bearings were remetaled and remachined.

Mr. Kennedy: Before we go any further, would you mark the document I have just referred to as the defendants' next exhibit, which I believe is 25.

Mr. Kritzalis: This one would appear to bear towards the bottom third of the page the Italian language "letture," new word, "al," and then the numbers 23/11/60, and I think we can use that for purposes of identification. The earlier documents bearing what appears to be a date 1/11/60.

(Document above referred to marked Defendants' Exhibit No. 25 [DEFENDANTS' EXHIBIT V, IN EVIDENCE] for identification, as of this date.)

[58] • •

- Q. Did you consider at all the draft of the vessel when you concluded that the— A. Oh, yes.
 - Q. Wait, let me finish.
- [59] —when you concluded that the alignment was excessive— A. Yes.
- Q. —or the—just a minute—when you considered that the measurements were excessive. A. Yes.
- [61] Q. To what extent, if any, would the change in draft affect the alignment of the crankshaft? A. I can't tell you in figures.

[62]

- Q. You were not then particularly concerned about the state of this crankshaft in February of 1961? And by this crankshaft I mean the Hellenic Sailor's crankshaft. A. No.
- Q. It was your custom, then, to maintain a careful check on all such crankshafts? A. Yes.
 - Q. Is that correct? A. Yes.

[65]

- Q. Mr. Allan, referring to Defendants' Exhibit 26-C, which is the record of alignments, crankshaft alignments, taken after the corrective work was done, I note that the shaft was in a hogged position. A. Yes.
- Q. Is this the desirable position when a ship is fully loaded? A. Yes. I will say it is the accepted condition, it is not desirable as I told you—
 - Q. The desirable is the-

Mr. Kritzalis: Let him finish the answer.

Q. I am sorry, go ahead. A. It is the accepted condition. The desirable [66] condition naturally would be zero, absolutely straight.

Q. Would it be more desirable to have a hog rather than a sag when the ship is fully loaded? A. Yes. That is in preparation for when she discharges that she will approach the zero line. In the light condition.

[67]

Q. Now, in comparing the readings as shown on the June 22, 1961 diagram, and those shown on the February 9, 1961 diagram, which are Defendants' Exhibits 28 [DEFENDANTS' EXHIBIT C, IN EVIDENCE] and 26-C, respectively, is there any reason why the June readings show less of a hog than the February readings? [68] A. Yes. The ship was partially discharged. And naturally the deflection approached to zero.

Q. You are referring now to the June period. A. Yes.

Q. That is, that the ship was lighter in June than it was in February? A. Yes. Considerably lighter.

Q. And the result is to decrease the hog in the shell?

A. Yes.

[69]

Q. Referring to Defendants' Exhibit 29-A, [DEFEND-ANTS' EXHIBIT D, IN EVIDENCE] I note that generally speaking the hog shown in the crankshaft is greater than that shown in the June 22, 1961 diagram, and less than that shown in the February 9, 1961 diagram.

Is there any reason for that difference? A. The February the 14th, 1962 diagram shows a greater hog than the June 22, 1961 due to—and this is due to the fact that the ship is loaded deeper.

- Q. And why does it show a lesser hog than the February 9, 1961 diagram? A. That could be the disposition of the cargo forward and aft, the relative position, or loading of the forward and after holds.
- Q. This is as opposed to the—just the draft figures? A. Yes, because the difference is slight. Eleven thousandths.

[70]

Q. I am aware of that. I am just studying Defendants' Exhibit 29-A [DEFENDANTS' EXHIBIT D, IN EVIDENCE] which shows the draft to be less than that shown on Defendants' Exhibit 26-C [NOT IN EVIDENCE]. And I thought that the greater the draft, the smaller the [71] hog.

Is that correct? A. Well, you are considering mean draft. Whereas you should take the forward and after individually.

[72]

- Q. Let's take a hypothetical now. You have hog in a shaft. A. Yes.
- Q. There are factors which may cause this shaft to move to zero and then eventually down to a sag position. A. Yes.
- Q. Is one of these factors wear and tear? A. One of them is wear and tear.

- Q. Another is draft of the vessel? A. Yes.
- Q. And another might be placement of cargo in the vessel? A. Yes, right. It is mainly draft.

[74]

Q. Referring now to the July 1, 1962 alignment reading, I note that it indicates that the vessel's crankshaft had a sag.

What if any factors would account for this sag? A. Well, a lighter load.

Q. That is, the draft shown in 16 feet forward and 22 feet aft. A. Yes.

Would the change in draft as reflected in the July 2, 1962 reading, Defendants' Exhibit 30A, account [75] for the changed, or the now sagged condition of the shaft? A. Apparently it did.

Q. So that we have in looking at the two documents a change in draft of somewhere between one and two feet—

Mr. Kritzalis: Is this mean draft?
Mr. Kennedy: Mean draft.

Q. —of somewhere between one and two feet, and then at the higher draft the vessel is shown to have a hog in the crankshaft, and at the lower draft the vessel is shown to have a sag in the crankshaft, is that correct? A. At the deeper draft it shows a sag.

Q. At the deeper draft it shows a hog, doesn't it? A. Oh, yes, yes, excuse me, yes.

Q. And by changing the mean draft approximately one or two feet, we now find that a year later the ship [76] shows a sag. A. Of course, as I said before, you don't go by the mean draft, you have to take the forward and aft draft individually when you are dealing with a hog and a sag.

Q. Well, the change forward is about two feet and the change aft is about one foot? -A. Well, forward it is more.

Q. And this in your opinion would account for the change in alignment of the shaft. A. Yes.

[81]

Q. I have another document which is dated merely September 1962.

Can you identify it, and, if you can, would you tell us what it is?

Mr. Kritzalis: May I see it? Mr. Kennedy: Sorry.

A. The upper part of this document concerns the—Q. I take it you can identify it. A. Yes.

Mr. Kennedy: Let's mark it first.

(Document above referred to marked [82] Defendants' Exhibit 32 [DEFENDANTS' EXHIBIT E, PAGE 4, IN EVIDENCE] for identification, as of this date.)

By Mr. Kennedy:

Q. Mr. Allan, would you tell us what this document is?

A. The upper part of the document refers to the bridge gauge readings. And after completion of repairs.

The lower part refers to the crank web deflections in hundredths of millimeters.

- Q. When were the repairs that you have just referred to completed? A. I believe that was in Piraeus.
- Q. Would you check your diary? You might be able to give us a better idea. A. What was the date there?
 - Q. September of 1962. A. The ship was in Piraeus.

[96]

Q. I show you another document which appears to be an invoice dated, a copy of an invoice dated December 12, 1962 [PLAINTIFF'S EXHIBIT 62, IN EVIDENCE], from Golten Marine.

Can you identify it? A. Yes.

- Q. Would you tell us what it is, please? A. It's an invoice for the services of the technician and labor for work done at Port Sudan.
- Q. This is work performed after the vessel departed Piraeus? [97] A. Oh, yes.
 - Q. And did you attend at Port Sudan also? A. What?
 - Q. Did you attend at Port Sudan also? A. Yes.
- Q. Would you tell us briefly what if any difficulty the Hellenic was experiencing with its main engine? A. She had overheated bearings.
- Q. Did you ever learn why the bearings were overheating?

Mr. Kritzalis: Are these the main bearings?
The Witness: Yes.

A. Yes.

- Q. Would you tell us, please? A. Microscopic pitting in the journals.
- Q. Could this microscopic pitting in the journals in any way affect the alignment of the crankshaft? A. No.

Mr. Kennedy: Would you mark the Golten invoice previously identified by the witness as Defendants' Exhibit 35 [PLAINTIFF'S EXHIBIT 62, IN EVIDENCE], please.

(Golten Marine invoice, above referred to, marked Defendants' Exhibit 35 for identification, [98] as of this date.)

By Mr. Kennedy:

- Q. Referring to the exhibit just marked for identification, sir, No. 35, it contains a reference also to services of Mr. Haugerstad, who attended and supervised machining of main engine bearings, 2, 3, 4 and 5, at Sun Shipbuilding in Chester. A. Yes.
- Q. Were these bearings removed from the Hellenic Sailor? A. No. They were new bearings from the factory.
 - Q. These were new bearings from the factory? A. Yes.
 - Q. Were these new bearings ever installed— A. Yes.
 - Q. —on the Hellenic Sailor? A. Yes.
 - Q. When was that? A. In Port Sudan.
- Q. Do you know whether Golten Marine prepared any reports showing crankshaft alignments after the bearings were installed? A. Yes.

[99] Q. Would you have any notes or other documents with you today which might indicate what the alignments were after the installation? A. I will check.

Mr. Kennedy: Off the record.

(Discussion off the record.)

A. I left New York, with Mr. Haugerstad, and two mechanics from Golten, on October the 24th, 1962, for Port Sudan. And we had the bearings shells with us. Four bearings shells.

Mr. Kritzalis: Were these top halves or bottom halves or both?

The Witness: Bottom halves.

[109]

Q. On September 8, 1964.

Now, I note that the ship's draft forward is 16 feet, three inches and its draft aft is 18 feet six inches. That is on September 8, 1964. And the shaft appears to have a slight sag. A. Yes.

Q. Would one expect slight sag in the shaft when the ship has the draft indicated? A. Yes.

Q. In the document? [DEFENDANTS' EXHIBIT M, IN EVIDENCE] A. Yes.

Q. Now, with reference to the Hellenic Sailor in 1964, that is, in September of 1964, if the ship were to be fully loaded, would one expect to find a sag in the crankshaft?

A. No. You would expect to find a hog.

Q. You are correct, one would expect to find a hog. A. Yes.

[110]

Q. I show you a document which appears to be a wire gauge reading for a crankshaft on the Hellenic Sailor dated February 1st, 1966 [DEFENDANTS' EXHIBIT N, IN EVIDENCE], and ask if you can identify it. And, if you can, would you tell us what it is? [111] A. It's a diagram of the taut wire reading, dated—

Q. Could you agree it is dated February 1st, 1966? A. Yes.

Q. Now, I note that the Hellenic Sailor at that time had a draft forward of ten feet, ten inches, and a draft aft of 22 feet, eight inches.

In this draft condition, would one expect to find the sag that is reflected in the document? A. Yes. It would expect to find a sag.

Q. And is this because the ship is generally light? A. Yes. The bow is high out of the water.

[113]

Q. Mr. Allan, referring to the Exhibit 39, [DEFEND-ANTS' EXHIBIT N, IN EVIDENCE] if one were to change the draft of the ship so as to indicate that it was fully loaded on February 1st, 1966, would one expect to find a sag, or, rather, a hog in the shaft? A. Yes.

[122]

Q. Sir, referring to the wire gauge reading of August 2nd, 1966, that is Defendants' Exhibit 41-A, [DEFEND-ANTS' EXHIBIT P, IN EVIDENCE] it shows that when the vessel had a forward draft of 14 feet, three inches and an aft draft of 25 feet, zero inches, the crankshaft had a slight sag.

Is that a fair statement? A. Yes.

Q. And with the vessel fully loaded, might one expect the crankshaft to be in a hogged position? [123] A. Yes.

Q. And the hogged position would be more desirable than the sagged position fully loaded? A. Yes.

Q. I hand you a document which appears to be a memo dated 8 November 1967, [PLAINTIFF'S EXHIBIT 63, IN EVIDENCE] containing attachment 6 November 1967, [PLAINTIFF'S EXHIBIT 26, IN EVIDENCE] containing also two copies of a wire gauge reading, dated 10-11-67. [PLAINTIFF'S EXHIBIT 23, IN EVIDENCE].

And I ask you if you can identify them. A. Yes.

Q. Would you tell us what they are? A. It's a cover letter to the chief engineer.

[124] Q. The first document is, why don't you start with the beginning? A. The first document is a letter to the office in Piraeus, concerning the crankshaft alignment of the Hellenic Sailor.

And the second one is a cover letter to the chief engineer. A diagram showing the shaft alignment taken by wire on October 11, 1967.

Mr. Kritzalis: Off the record.
(Discussion off the record.)

Q. Was there any special reason why on the 8th of November 1967 you reported to Piraeus concerning the main engine crankshaft of the Hellenic Sailor? A. No. We sent these alignment diagrams to the Piraeus office every time they were taken.

Q. Mr. Allan, one of the other documents you [125] have identified is a letter dated 6 November 1967 which you sent to Mr. Evengelou, chief engineer of the Hellenic Sailor. It was posted to him care of your Philadelphia agents, I believe. A. Yes.

Q. It's been previously marked as defendants' Exhibit 3, [PLAINTIFF'S EXHIBIT 26, IN EVIDENCE] and I would ask you to study the letter and tell us why you appeared to be particularly concerned with alignment readings as reflected on the report of, or reflected in the report of Golten dated October 11, 1967.

Mr. Kritzalis: I object to the form of the question.
Mr. Kennedy: Because of my reference to the concern?

Mr. Kritzalis: Particular concern. Mr. Kennedy: Particular concern.

I will rephrase the question, then, Mr. Allan.

Q. You said please note the position of the crankshaft with Nos. 2, 3 and 4 below the zero line. It is important to observe the ship's draft while the readings were taken, and with 12 feet, six inches forward [126] the ship would be in a comparatively light condition causing the deflection to be below the zero line, although the figures show an access,

and I think you meant the word excess over the desirable measurements.

Now, what were the desirable measurements that you were referring to in the letter of November 6th? A. Well, that would be an approximation, as we said before.

- Q. Could you give us an estimate of the desirable measurements that you referred to? A. No.
- Q. Give us some idea of what you were talking about?
- Q. Did you think that the deflection was a little bit greater than it should have been? A. Yes.
- Q. And this is why you wrote this letter to the mate?
 - Q. Engineer, that is? A. Yes.
- Q. Referring now to the measurements on [127] Defendants' Exhibit 4, would one expect that when the ship were fully loaded the crankshaft would show a hog? A. It would show a slight hog. It would show a slight hog.
 - Q. It would or it should? A. It would.
 - Q. It would.

And of course the slight hog would have been desirable?

A. Yes.

(Record read.)

Q. Referring to the, your letter of November 6th to the chief engineer again, you concluded it by stating we will take further readings at the next available opportunity with the ship in both loaded and light conditions.

Can you tell us why you made this statement?

Mr. Kritzalis: Did he have a letter in front of him?

The Witness: Because it was the usual procedure.

Q. It was the usual procedure to what? A. To take readings loaded and light condition.

[128] Q. Who would make these measurements, Golten? A. Well, Golten, if the chief engineer didn't have the instrument.

Q. When you said we will take further readings, by that am I to understand that you included the chief engineer to whom you were addressing the letter? A. Yes. Well, when I went to the out ports, I used to carry the instrument with me. And then I would take it with the chief engineer. Myself. Save \$150 for the company.

Q. So that you expected that at the next opportunity you and the chief engineer or Golten or maybe all three of you? A. Yes.

Q. Would take alignment readings? A. Yes.

Q. Is that right? A. Yes.

Mr. Kritzalis: Off the record.

(Discussion off the record.)

Q. Do you know when the alignment readings were next taken, that is, after your November 6, 1967 letter to the chief engineer? [129] A. No.

Q. Do you know whether any were taken before December 24, 1967? A. December 24th?

Q. That is, in the period November 6, 1967, and December 24, 1967. A. I don't recall.

Q. You don't recall.

At the time you wrote the letter of November 6, 1967, [PLAINTIFF'S EXHIBIT 26, IN EVIDENCE] had you learned of an incident that the master had reported concerning the vessel's striking bottom or touching bottom upon leaving New Orleans? A. I don't recall that.

Q. You don't recall that. A. But it was probably told

to me at the time.

Q. At the time you wrote the November—you probably knew that? A. Yes. I probably knew that, yes.

Q. At the time you wrote the November 6th letter. A.

Oh, I am not sure about that.

Q. Well, if such a report were received by Hellenic Lines in New Orleans, would you be immediately [130] notified? I am referring now to a report of a grounding or a touching bottom when the vessel departed from New Orleans. A. If it were considered serious, naturally they would inform the office immediately.

Q. Would you be notified? A. Yes, if it was serious I

would certainly be notified.

Q. If the report was sent to the New York office would you receive prompt notification? A. If the owner considered it serious, he would notify me promptly.

Q. By owner you are referring to Callimanopulos? A.

Yes.

Q. Do you recall whether Callimanopulos notified you of an incident— A. I dcn't remember.

Q. —which occurred in, I believe, October 31, 1967, in New Orleans? A. No, I don't recall that.

Q. Did you ever learn of such an incident? A. I did eventually. I heard about it as the case proceeded, I did

hear about it. But I don't recall [131] any specific time prior to the casualty, if that is what you mean.

- Q. If you had learned of the incident as of the time you wrote the November 6, 1967 letter to the engineer, would you have expressed greater concern over ship's—over crankshaft alignments? A. I would have expressed greater concern if I had known that it was a serious grounding.
- Q. Did you ever learn that it was a serious grounding?

 A. You mean prior to the casualty?
 - Q. No. Did you ever. A. Yes.
- Q. And when did you learn that it was a serious grounding? A. Well, I didn't hear it was a serious grounding, I heard the investigation going on, the discussions going on between the people concerned in Bombay.
- Q. Did you receive reports concerning this grounding from the chief engineer? A. No.
 - Q. Any oral reports? A. No.
- [132] Did he ever talk to you about it? A. I don't recall that.
- Q. Did the master ever talk to you about this grounding? A. No.
 - Q. He didn't? A. Possibly he did, I don't recall.
- Q. Did Callimanopulos ever talk to you about this grounding? A. I don't know.
- Q. Did you ever read any reports concerned with this grounding? A. I did. Well, I don't—no, I was told about it. I didn't—
 - Q. You were told about it? A. I didn't read it.
- Q. Based upon what you were told, do you have an opinion as to whether it was a serious grounding or not? A. No.

Q. You don't have an opinion? A. No.

Q. Do you have an opinion as to whether the grounding, and this is based upon what you were told about [133] it, do you have an opinion as to whether this grounding could have in some way disturbed the crankshaft? A. No. I don't have an opinion.

Q. But had you learned of the grounding by the time you wrote the November 6, 1967 letter you would have been concerned a little bit more about the crankshaft alignment,

is that correct?

Mr. Kritzalis: I object to the form of the question.

A. I have answered that, I believe.

Q. Go ahead, answer it again. A. I can't recall what I would have thought about it at the time.

Q. Did you ever express an opinion that this, the incident of October 31st caused or contributed to the fracture in the Hellenic Sailor's crankshaft? A. No, I didn't.

Q. Did you ever express the opinion that it didn't? A. No.

Q. So then you really have no opinion? A. No, I have no opinion.

Q. Did you attend on board the Hellenic Sailor when she arrived at New York in November of 1967?

[134] (Question read.)

A. Yes, I was in New York, and I did attend on board.

Q. Did you have any conversations with the master when you attended on board? A. Yes.

- Q. Any concerning the incidents of October 31, 1967? A. Not that I—I don't recall.
- Q. Did you have any conversations with the chief engineer when you attended on board at that time? A. Yes.
- Q. Any conversations concerning the incidents of October 31, 1967? A. I don't recall.
- Q. Did you have any conversations concerning the crankshaft alignment with the, this is with the engineer now. A. I probably did. I always did.
- Q. Do you recall the substance of these conversations?

 A. Just our concern to keep the shaft in—
 - Q. Proper alignment? [135] A. Proper alignment. Yes.
- Q. At the time you attended on board in 1967, this is in November of 1967, at New York, do you recall the draft of the ship? A. No.
 - Q. Do you recall whether she was fully loaded? A. No.
- Q. Would you know, in attending on board, would you know whether she was fully loaded or not, as the port engineer? A. Oh, I would know, yes.
- Q. So that is it safe to assume that when you attended on board you knew the ship's condition with respect to cargo? That is, you knew whether she had a full load on board or whether she was empty or half empty? A. I would know it at the time.
- Q. At the time. All right. A. We had four ships in the pier that day.
- Q. When attending on board the Hellenic Sailor, at New York, in 1967, this is November again— A. Yes.
- Q.—did you together with or did you by yourself or do you know whether the chief engineer took a wire [136] gauge reading of the crankshaft alignment? A. I don't remember that.

- Q. If you took one, would you make a record of it? A. Yes.
- Q. Would you check the records you have with you today and let us know whether you made such a reading? A. No, I don't have it in mine.
- Q. You don't have it in your records? A. No, I didn't keep that in mine.
- Q. You didn't keep it yourself. A. I don't keep all the details in this little, these little entries in these things.

Mr. Kritzalis: Referring now to your diaries, your annual diaries?

The Witness: Yes.

- Q. If you did take a wire gauge reading of the crankshaft alignment, would you have made a record of it anywhere? A. Oh, yes.
- Q. What would you do with that record? A. File it and send one to the chief engineer—
 - Q. Send one to Greece? A. And send one to Greece.

[137] Q. File one in the New York office? A. Yes.

- Q. Now, if Golten Marine checke ankshaft alignment, at New York, in November 1966, would they send a copy to your company? A. Yes. They send several copies.
 - Q. Would you have seen the copies? A Yes.
- Q. What would you have done with the copies? If anything. A. The usual thing.
 - Q. Sent one to Greece? A. Yes.
- Q. Filed one in the New York office and given one to the engineer? A. Yes.
 - Q. Is that correct? A. Yes.

Q. Now, if the engineer had taken a wire gauge reading of the crankshaft alignment while the vessel is at New York in 19—in November of 1967, would he have given you a copy? A. Yes.

[138] Q. Would he have filed a copy on the ship? A. Yes.

Q. And what would you have done with the copy that he gave you? A. I would copy it, send one to Piraeus, and file one.

Q. In the New York office? A. Yes.

.

Q. And when you attended on board in 1967, again, in New York, November, were you aware of the October 31st incident? A. I don't remember. I repeat, I don't remember.

Q. Referring to your letter of November 6, 1967, when you said that we will take further readings at the next available opportunity. A. Yes.

[139] Q. Did you have an opportunity to take readings when the ship was in New York in November? A. I don't know. If we had the opportunity, I myself certainly would have taken it.

Q. What facts would have to be present in order to give you an opportunity to take alignment readings? A. I don't quite understand the question.

Q. Well, when you talk about an available opportunity—A. Yes.

Q.—what factors must be present in order, you know, which would give you an opportunity to take alignment readings? A. Well, the engine would have to be available.

Q. That is, not running? A. Yes. And available. While it could be ready to go the—it could be standing by to leave, for instance. Then you can't do it.

Q. How much time does one require in order to take a crankshaft alignment reading? This is a— A. About two hours.

Q. Using a wire? A. Two hours.

[140] Q. Two hours.

So you would require a two-hour period during which time the vessel's engine was not in use? A. Yes.

Now, there is another factor. Probably, or possibly, rather, they could have been working on one of the cylinders or the pistons.

Q. Do you know whether they were? A. No. But then if we didn't take the alignment reading, they probably were. They usually work at pistons in port.

Q. If they were working on the engine, would this fact be reflected in the engine log? A. No.

Q. Wouldn't? A. No. It would be reflected in the—no, if the crew did it—I am not sure if it would be reflected.

If the crew did the work, this work on the engine, which they usually did, it could have been reflected in the logbook.

Q. In the engine log? A. Or in the workbook, I would say.

[141] Q. Is there a difference between a workbook and an engine logbook? A. Yes. The engine log is mainly for the operation of the engine. But the details of repairs don't appear in the engine logbook.

Q. So if I wanted to find out whether any of the crew members were working on the engine of the Hellenic Sailor during the time she was in New York, in November of 1967, how would I go about finding out that information? A. Well, possibly it would be in a workbook.

Mr. Kennedy: I will call for production of the workbook.

The Witness: Well, it's on the ship.

Mr. Kritzalis: So long.

Mr. Kennedy: Has it been sold yet?

Mr. Kritzalis: I don't believe the vessel has changed hands yet. I don't believe the transfer has taken place.

Mr. Kennedy: Mr. Kritzalis, in view of the importance of our learning what if any work was being done on the engine of the Hellenic Sailor at the time she was in New York in 1967, November, [142] I wonder if you might be good enough to contact your client, ask him that they send appropriate cables, telexes and what-not so we can learn the whereabouts of the workbook.

Mr. Kritzalis: I will contact the client and ask him to do so, happily.

The Witness: Now, I am sure they did work on the—they always work on the engine. On any motor ship they are always working on engines, renewing piston rings and cleaning cylinder liners.

Q. Might there come a time when you as the port captain would feel that greater priority should be given to taking alignment readings on the crankshaft rather than conducting general repairs on the engine? A. Yes.

Q. In such a case, would you have authority to see to it that the alignment readings are taken, and that the maintenance work is postponed, at least temporarily? A. Well, you can't postpone it temporarily, if you have to renew pistons. That is something very very essential.

Q. Well, I am talking about the question of priorities. [143] A. Oh. Well, you mean to delay the ship.

Q. If necessary. A. Oh, well, I haven't come across that yet.

Q. You didn't feel then that the conditions on board the Hellenic Sailor at New York in November of 1967 were such that an examination of the crankshaft alignment was

necessary. A. I always considered it necessary.

Q. But you didn't consider, though, that then it should be given any priority, any particular priority, is that correct? A. No. Well, I am only surmising that they had the piston out on the ship. And I think it is probably due to, if we didn't get an alignment it is probably due to the fact that part of the engine was disassembled.

Q. Do you generally get an alignment when you attend on board one of your vessels at New York? A. Yes. One

of the Doxford vessels.

Q. And whenever such alignment is taken, a record is prepared of the alignment? A. Oh, yes.

Q. And that record is filed with the company? A. Yes.

[149] CHARLES ALLAN, previously sworn, resumed.

Examination by Mr. Kennedy:

Q. In writing the November 6th letter [PLAINTIFF'S EXHIBIT 26, IN EVIDENCE] to the chief mate, did you intend that he, upon receiving it or shortly thereafter, take alignment readings? A. Would you repeat that, please?

Q. Was it your intention that the chief mate take alignment readings when you wrote your letter of November

6th to him? A. Yes.

- Q. And you don't recall whether he did take alignment [150] readings, or you don't recall whether he reported to you concerning the alignment readings? A. I don't recall.
 - Q. You don't recall whether he did take them? A. Yes.
- Q. And you don't recall whether he reported them to you?
- Q. Did you at any time thereafter have an opportunity to review a document which I believe will be submitted as an alignment reading taken by the chief mate at Philadelphia on board the Hellenic Sailor in November of 1967? A. That would be the chief engineer.
 - Q. Chief engineer. A. No. I don't recall that.
- Q. I show you a document which is a yellow sheet containing what appear to be alignment readings.

Have you ever seen this document? A. I don't remember.

Q. You don't remember? A. No.

[154] Q. Would it be more desirable if the shaft were in a hogged position with that load? A. The desirable thing would be zero.

[160] • • • •

- Q. Did there come a time when you learned that the crankshaft on the Hellenic Sailor had fractured after she left New York in November of 1967? A. Yes.
- Q. When did you learn about the fracture? A. (Referring to notebook.)

December 24.

- Q. You are referring now to another diary. A. Yes.
- Q. Which you keep? A. Yes.

[161] Q. May I see it?

And I gather you departed New York for Jedda shortly thereafter. A. Shortly thereafter.

Q. Strike that. It should be for Port Sudan, isn't that

correct? A. Yes. I left on the 28th.

Mr. Kritzalis: Of December. The Witness: Of December.

Q. Did you go of your own volition or were you requested to go by one of your superiors? A. I was—

A. I was instructed to go.

Q. By whom? A. By Mr. Callimanopulos.

Q. Were you given any specific instructions? A. Yes.

Q. And what were they? [162] A. That I should examine the damage and report to him immediately.

Q. Were you asked to determine, if you could, the cause of the damage? A. No.

Q. Were you asked to determine what could be done to complete the voyage in view of the damage? A. Yes.

Q. Were you asked to supervise whatever repairs would be required in view of the damage? A. Firstly, I tried to repair it myself with the aid of the small shippard at Port Sudan.

Q. Well, by yourself, you don't mean-

Would you be expected to do the manual labor? A. No.

Q. Which would be required? A. No, no.

Q. You were asked to supervise? A. And to design the equipment required to—

- Q. Complete repairs? A. —to complete repairs, the temporary repairs.
- Q. Prior to departing New York for Port Sudan, which I believe was either late December or early January [163] of '67-68, did you consult at all with the Sun Doxford engine people? A. Prior to my departure for Port—that was on December 28.
 - Q. Yes. Prior to December 28. A. Yes, I did.
- Q. For what purpose did you consult with this company?

 A. I requested them to tell me if it were possible or feasible, rather, to operate that engine at considerably reduced horse-power on three cylinders.
- Q. And what did they tell you? A. They said it could be done.
- Q. Did you discuss with Sun Doxford at all or rather what should be done with respect to the broken crank web?

 A. I was—

Mr. Kritzalis: I object to the form of the question. There is no Sun Doxford in the record. I think you are referring to Sun Shipbuilding. Sun Doxford is a design.

Q. All right.

Did you discuss with Sun Shipbuilding? [164] A. I was in Port Sudan at the time, and I had no further—

Mr. Kritzalis: Let him finish the question, Mr. Allan.

A. Well, no.

Mr. Kritzalis: You have to listen to the question and let him finish it.

Mr. Kennedy: The witness had already testified about Sun Doxford, so you are a little late.

Mr. Kritzalis: Why don't you ask him whom he talked to?

Q. Whom did you talk to? Sun Doxford or Sun Shipbuilding? A. I talked to Sun Shipbuilding, the Wetherell Plant where the engines were built originally.

Q. So, when I used the expression before, the Sun Doxford people, did you consider that I was talking about the Sun Shipbuilding people? A. I understood that.

Q. Did you discuss with Sun Shipbuilding what, if anything, could be done with the fractured web? A. No.

Q. And by done I mean how the web should be, at [165] least temporarily, put back together so that the shaft could rotate? A. I didn't know the extent of the damage before I left New York.

Q. When did you arrive at Port Sudan? A. I arrived at Port Sudan on the, 11:30 on the 2nd of January, 1968.

Q. And did you immediately go to the vessel? A. Yes.

[167]

Q. I have also a document which appears to be a copy of a letter that you addressed on December 26, 1967, [NOT IN EVIDENCE] to Mr. Evangelou, the chief engineer of the vessel.

Is it not such a copy? A. Yes.

Can I read it?

Q. Mr. Kritzalis would like to have a look at it first.

Mr. Kritzalis: I have a copy.

Q. Then you may read it, surely.

The letter refers to instructions that you gave the chief engineer, particularly with reference to the number three main bearing. A. Yes.

Q. Would you tell us why you gave such instructions? A. Yes.

Number three main bearing is the bearing that supported the section of crankshaft that had been fractured.

[168] Q. And, in requesting that this work be done, with respect to the number three main bearing, what were you trying to determine, if anything? A. If the clearance had been excessive.

Q. The clearance of the bearing between— A. Between the lubrication space and the spherical clearance.

Q. If it had been excessive, would that cause, could that cause any damage to the crankshaft? A. Well, depending on the extent of the excess.

Q. Did you ever determine whether an excessive clearance in the number three main bearing caused the crankshaft to fracture? A. No.

Q. You never did? A. Well, I did, yes, I did, inasmuch as I knew it was not that, because the bearing was in good condition if I recall correctly.

[176] Q. Did Hellenic Lines from time to time have web deflection readings taken? A. The chief engineers took them almost—every voyage.

Q. Did you record them anywhere? A. Yes, he recorded them.

Q. Since I probably wouldn't recognize the readings even if I saw them, I would ask you to tell me if such readings are contained in the company records that we have here today, that is, if you know. A. No, I don't believe so.

The chief engineer kept those and, unless there was something abnormal, I wouldn't do anything about it.

[177]

Q. Do you know whether, upon receiving your letter of November 6, 1967, the chief engineer checked the crank web deflections on the shaft? A. No, I don't.

Q. Would you expect that, in view of the sag in the crankshaft, he might have?

Mr. Kritzalis: I object to the form of the question.

Q. You may answer. A. I don't know. I really can't answer that.

Q. Did he take such measurements to your knowledge in November of 1967, either at Philadelphia or at New York? A. I don't know.

[187]

Q. Now, knowing the condition of the Hellenic Sailor's crankshaft with respect to deflection in October, 1967, and had you received the interoffice memorandum [PLAIN-TIFF'S EXHIBIT 18B, IN EVIDENCE] and the captain's letter [PLAINTIFF'S EXHIBIT 18A, IN EVIDENCE] which have been marked as Defendant's Exhi-

bits [188] 47 [PLAINTIFF'S EXHIBIT 18B, IN EVI-DENCE] and 47-A, [PLAINTIFF'S EXHIBIT 18A, IN EVIDENCE] would you have been at all concerned as to whether the incident reported by the master might have adversely affected the crankshaft? A. I would like you to repeat that question again, please.

Mr. Kennedy: Would you read it back, please? (The question was read.)

A. Well, frankly, I don't remember that condition of that shaft in October. I would have to see that.

Q. Well, I used the expression deflection of the crank-shaft. A. Yes.

Q. Would your answer be the same if I had used the expression alignment of the crankshaft? A. Yes, well, alignment, I would want to see that alignment before I can answer that question.

Q. Do you recall seeing the alignment that was taken—strike that— Do you recall yesterday seeing the alignment that was taken of the crankshaft in October of 1967? A. I recall it being produced here, but I don't remember the exact condition as it was.

Q. Would you like to see it again for that purpose? [189] A. Yes.

Mr. Kritzalis: You don't have any that are marked twice, do you?

Mr. Kennedy: No. I am trying to avoid that if I can.

Let the record note that I have handed the witness a document that has previously been marked as De-

fendants' Exhibit 4, [PLAINTIFF'S EXHIBIT 23, IN EVIDENCE] all, of course, for identification, and it is the crankshaft alignment reading taken for the Hellenic Sailor on October 11, 1967.

The Witness: Now may I ask you to read the question again, please?

Mr. Kennedy: Read the question back.

(The question referred to was read as follows:

"Now, knowing the condition of the Hellenic Sailor's crankshaft with respect to deflection in October, 1967, and had you received the interoffice memorandum and the captain's letter which have been marked as Defendants' Exhibits 47 and 47-A, would you have been at all concerned as to whether the incident reported by the master might have adversely affected the crankshaft?")

[190] A. I would naturally expect to receive reports containing diagrams of the crankshaft, the alignment of the crankshaft, in a routine manner.

Mr. Kritzalis: Could I hear the answer, please?
(The answer was read.)

Q. Well, I don't think you have quite answered my question.

Isn't it true that in November of 1967 you had information to the effect that the Hellenic Sailor's crankshaft on October 11, 1967, had an alignment as reflected in Defendants' Exhibit 4 for identification?

Just answer yes or no. Isn't it true? A. Yes.

Q. And didn't you write to the vessel's chief engineer concerning that alignment on November 6, 1967? A. I wrote and asked him to take an alignment, but I don't recall whether it was due to this because I don't know if we had that.

Q. That's not my question.

My question is, knowing what you knew in November of 1967 about the crankshaft. A. Oh, I knew in Port Sudan.

Q. Please.

[191] Knowing what you knew about the crankshaft in November of 1967, I am asking you that, had you received the captain's letter concerning the grounding and the inter-office memo from New Orleans, the documents which have been marked 47 [PLAINTIFF'S EXHIBIT 18B, IN EVIDENCE] and 47-A [PLAINTIFF'S EXHIBIT 18A, IN EVIDENCE] respectively, I am asking you if, under those circumstances, you might have been concerned about whether the grounding incident could have in some way disturbed the crankshaft.

Mr. Kritzalis: I object to the form of the question.

Q. Answer it. A. Answer it?

Mr. Kritzalis: Yes. Answer.

A. The captain does not say it was a serious grounding, and I probably would not have attached as much importance to it as I did according to my letters, the telex, the letter here, I believe, in Port Sudan.

Mr. Kritzalis: Is it a letter or a cable?

[194]

Q. Sir, if you had been told of a heavy grounding at the port of New Orleans, and you had received this information at the port of New York— A. Yes.

Q. —on November 6, 1967, would you have been concerned at all about the condition of the crankshaft? A. I would have been concerned about the condition of the entire ship, the bottom, the engine, and everything.

[225]

Q. Sir, while you were at Port Sudan in January of 1968 attending the Hellenic Sailor, were any records made of shaft alignment? A. Yes.

[226] Q. Do you recall when such records were made?

A. I don't recall the exact date; dates, rather.

Mr. Kritzalis: This is now speaking of January '68?

Mr. Kennedy: Yes.

A. January of '68?

Q. By the way, when did you leave Port Sudan in January of 1968?

I am assuming that you did.

If you did not, would you tell me that you did not? A. I did not leave in January, 1968.

Q. When did you leave? A. I am getting the date (Referring to diary).

Q. All right. A. I left on the 7th of February, 1968.

Q. For what purpose did you leave Port Sudan in February of 1968? A. Because the temporary repair had been abandoned.

Q. And is it true that you left for the purpose of locating a shippard who could effect permanent repairs to the crankshaft? A. I received notice from New York to proceed to [227] Bombay while I was awaiting a plane from Khartoum.

Q. Did New York tell you why they wished you to proceed to Bombay? A. Yes.

Q. And for what reason did they ask you to proceed? A. To investigate the possibility of, or the capability, rather, of the Bombay shippard to effect a permanent repair.

Q. Did you at some time during that same period go to Aden?

Nr. Kritzalis: During what same period. Mr. Kennedy: February of 1968.

A. Yes.

Q. Did you go to any other cities? A. Yes, I went to Karachi before Aden.

Q. For what purpose? A. To investigate the capabilities of the shipyards.

Q. Do you recall how many cities you visited for the purpose of investigating the shipyard repair facilities? A. Yes, three.

[228] Q. Bombay? A. Karachi.

Q. Karachi? A. And Aden.

- Q. And did you come to a conclusion with respect to the facilities at Aden? A. At Aden?
 - Q. Yes. A. Yes, I came to a conclusion.
- Q. What was that conclusion? A. That they were not able to perform the repairs.
- Q. Did you come to any conclusion with respect to the repair facilities at Karachi? A. Yes.

They were inferior to those in Bombay.

- Q. So that you concluded that repairs could be accomplished at Bombay? A. Yes.
- Q. Did you attend any other cities for the purpose of learning whether repairs could be accomplished? A. No.
- Q. Was there any reason why you did not go to other cities for the same purpose? [229] A. Well, I decided that Bombay was capable of doing the repair and the others were too remote.
 - Q. By others you mean other cities? A. Other shipyards.
 - Q. You did not attend. A. Yes.
- Q. Were the repairs we are concerned with intended to be temporary repairs or permanent repairs? A. They were intended to be permanent.
- Q. And when the ship departed Port Sudan in, I believe, May of 1968 for Bombay, was it for the purpose of having permanent repairs made at Bombay? A. Yes.

[231]

- Q. Could the readings have been taken sometime in February of 1968? A. There were readings taken then, but that was with a transit, a telescope.
- Q. With a transit telescope? A. Well, a transit. I am just—it has been referred to as telescope before.

Q. Did you take any wire readings?

Are you certain that you took wire readings in January of 1968? A. I am not completely certain about that. I am not. I can't say that, because I don't recall it.

Mr. Kritzalis: Do you have anything written in your diary which would indicate that you did?

The Witness: No, but I remember, I remember asking the New York office if they could possibly send Mr. Haugestad with the transit, being more accurate.

[239]

Q. Can it be said that on February 3 at Port Sudan at the time when the alignment, the telescope alignment, was taken, that the Hellenic Sailor was fully loaded? A. I don't remember that. I don't remember the figure.

Q. Would you look at the draft?

[240] You have a forward draft of 24 feet 00 inches, and an aft draft of 29 feet 00 inches. A. Okay. She wasn't fully loaded, but almost fully loaded.

[241]

Q. With reference then to the same exhibit, and keeping in mind that the evidence is or will be that the Hellenic not* A

Sailor did nto discharge any cargo between the time she departed New York in November, 1967, and the time [242] she arrived at Port Sudan, up to February 3rd, would it be fair to say that the February 3 crankshaft alignment as

[&]quot;A" is Allan's initial upon correcting and signing transcript.

recorded in the exhibit reflects the alignment in the ship or the ship's crankshaft when she departed New York in 1967?

Mr. Kritzalis: I will object to the form of that question.

A. No.

Q. Why not? A. Because the shaft was lying in a different position after the web fracture.

Q. Would the web fracture cause the shaft to depart from alignment zero in the direction of a sag or in the direction of a hog! A. That, I can't answer that.

[250]

Q. Referring to Defendants' Exhibit 51-B, [PLAIN-TIFF'S EXHIBIT 39, IN EVIDENCE] sir, I note that there are two readings at position two and two readings at position three. A. Yes.

Q. At position two the reading was, or at position two one reading is 015 and the other reading is 021.

Would this difference be brought about because the shaft had been pulled down tight at the number two bearings?

A. Yes.

Q. Now referring to the difference in position three on 016° A

the same exhibit, that of 014 and 021, is the reason for the difference also because the shaft was pulled [251] down tight at the number two bearing? A. Yes.

Q. Is there any reason why one would take a reading, let us say, without the shaft being pulled down tight at

^{• &}quot;A" is Allan's initial upon correcting and signing transcript.

numbers two and three bearings, and one would then take a reading with the shaft pulled down tight at numbers two and three bearings? A. The reason for that was to see if all, the bearings and the shells themselves were in perfect alignment or near perfect alignment.

Q. And, as a result of these tests, did you reach any conclusion? A. Well, yes. I reached the conclusion that it was almost perfect.

Q. If it had been almost perfect, would there have been any change in the readings? A. Well—

Q. Strike that.

If it had been absolutely perfect. A. If it had been absolutely perfect—

Q. Would there have been any change in the readings? A. There would have been no change, but it is impossible [252] with a piece of equipment that weighs 120 tons and the thing is, .006 is about the thickness of that piece of paper you are holding.

[254]

- Q. Which of the two methods of checking alignment is more accurate, the telescopic method or the wire method? A. The telescopic method is the more accurate, because it is a ray of light, which does not bend.
- Q. The bending you are referring to is the bending one would expect in a wire reading. [255] A. A wire sags.
- Q. Agreed. A. That was the object of requesting the presence of Mr. Haugestad with the K & E telescope to make sure we had the correct reading.

[256]

- Q. Did there come a time when, prior to your departure from Port Sudan in February of 1968, you were instructed to check the entire crankshaft of the Hellenic Sailor for the purpose of learning whether there were any other fractures in it? A. I did. But I was not—I did it without being instructed.
- Q. I hand you a document which I ask you if you can identify.

Mr. Kennedy: May I see the original, Mr. Kritzalis?

A. Yes.

[257] Q. Is this document a copy of a telex message that you received while you were at Port Sudan? A. Yes.

- Q. And you say prior to receiving this message you had checked the entire crankshaft? A. Yes.
 - Q. For further cracks? A. Yes.
- Q. Did you use any particular method for checking the crankshaft? A. Yes, dye check.

[258]

- Q. And you said the crankshaft was dye checked while you were at Port Sudan? A. Yes. I took the dye check with me.
- Q. You took it with you, and the results disclosed that there were no other fractures? A. There were no other fractures.

.

[267]

Q. Mr. Allan, there came a time when it was decided that temporary repairs to the crankshaft at Port Sudan were not feasible, is that not correct? A. Yes.

Q. There came a time also when there were discussions had concerning how the Hellenic Sailor would be towed to a port or how it would be taken to a port for permanent repairs, is that correct? A. Yes.

I didn't attend that.

Q. I was about to ask you if you participated in any of these discussions. A. No.

Q. You did not? [268] A. Well, excuse me.

There were two questions.

You asked me if it was decided, if I knew about it being that • A

decided that the permanent, the the temporary repairs were not suitable.

- Q. You knew about that? A. I knew about that.
- Q. Did you participate in reaching this decision? A. Yes.
- Q. You also decided that the vessel should be permanently repaired at Bombay, isn't that correct? A. Yes.
- Q. But you did not participate in any of the discussions concerning how the ship was to be taken to Bombay? A. No.
- Q. You are aware of the fact, are you not, that a substantial quantity of the cargo on board the Hellenic Sailor at Port Sudan was transferred to the Hellenic Glory, I believe. A. Yes.

^{* &}quot;A" is Allan's initial upon correcting and signing transcript.

Q. Did you participate in any of the discussions having to do with the transfer of the cargo? [269] A. No.

Q. Are you aware also that certain cargo was left on board the Hellenic Sailor? A. Yes.

Q. And that this cargo was carried by the Hellenic Sailor while in tow to Bombay, is that correct? A. Yes.

Q. Did you participate in any of the discussions having to do with this cargo that had been left on board? A. No.

Q. Did you participate in any of the negotiations having to do with who would tow the vessel to Bombay and the price to be paid for the towage? A. No.

[291]

Q. Mr. Allan, I hand you a document previously marked as Defendants' Exhibit 15-F [DEFENDANTS' EXHIBIT Q, IN EVIDENCE] for identification.

Do you recognize it? A. Yes.

Q. Could you tell us what it is? A. It is a diagram showing the final readings of the crankshaft alignment following the repair and also the difference in journal diameters where they have been machined at the previous repair, indicating the original 24-inch diameter at number three where the new section of [292] crankshaft was installed.

Q. Was the journal diameter at three greater because it was a new section? A. It was a new section.

In fact, it was the part that came from Sun Shipyard.

Q. And we are referring now to diameters in inches, is that correct? A. In inches.

Q. Is there any reason why the diameter reading for number two journal is followed with the expression "mean"? A. Yes, because it was slightly less in diameter

at the—slightly less in diameter at the after end than at journal. A

the forward end of the joining.

- Q. Does it indicate any reason for that? A. No, it was machined.
- Q. And might it also indicate a certain amount of wear at the after end. A. No.
- Q. Now, the bottom half of the exhibit refers [293] to micrometer readings. A. Yes.
- Q. Are these readings the deflection of the crankshaft?
 A. Of the crankshaft.
- Q. Itself after the completion of the repairs? A. Yes. And, if you note the side column, it shows where I took the half of the difference in diameter of numbers one, two, four, and five, and subtracted those from the reading, the wire reading, in order to get an accurate reading.
- Q. Which side column are you referring to? A. At the extreme right of the page.
- Q. I see the wire sag constant. You are not referring to that column, are you?

Mr. Kritzalis: The one up above.

A. No, the one up above.

- Q. The one up above, one half inches difference from the original. A. Yes.
- Q. Would you please explain what you mean by the reference to deducting one half the difference from the [294] original readings? A. Well, with the shaft being smaller in diameter, it would cause a greater distance between the

^{* &}quot;A" is Allan's initial upon correcting and signing transcript.

top of the journal to the wire. And that, we took half of that diameter and subtracted that from the reading, in addition to the constant.

- Q. So that you were now taking into account in compiling the alignment readings— A. Yes.
 - Q. —the difference in journal diameter. A. Yes.
 - Q. As well as the- A. Constant.
 - Q. —the wire sag constant. A. Yes.

Mr. Kritzalis: Can we go off the record?

Mr. Kennedy: Yes.

(Discussion off the record.)

Q. Now, after making the adjustments for diameter difference from original and wire sag constant, you concluded, or found, or determined, I believe, that the alignment of the crankshaft at position two or at bearing two was minus .004 thousandths of an inch from zero. [295] A. Yes.

Mr. Kritzalis: Well, it's not .004 thousandths of an inch. It's four thousandths of an inch.

Q. I stand corrected, and at three, the departure from zero was minus four thousandths of an inch, and at four it was minus three thousandths of an inch.

Is that correct? A. That's correct.

Q. Does the minus indicate that the shaft is in a hogged or in a sagged position? A. It indicates it is in a sagged position.

Q. And it indicates this is desirable because of the ship's draft, is that correct? A. Yes.

Q. I hand you, sir, another document which appears to be a wire alignment reading taken on the crankshaft, I believe of the Hellenic Sailor, at Bombay on August 16, 1968.

Mr. Kritzalis: I think this had been marked in some other--

Mr. Kennedy: Evangelou.

A. Yes.

Q. Do you recognize it? [296] A. Yes, I do.

Q. And was such an alignment taken of the Hellenic Sailor's crankshaft on August 16? A. It was taken on August 16, and, following that, number two, three, and four lower shells were removed for final scraping.

Q. All right.

Before we get to the final scraping of the lower shells that you just referred to, I note that the document you have just identified shows that on August 16, Chief Engineer Evangelou took wire gauge readings and found that the departure, found that there was no departure from

• A

zero at bearing number four, the departure at zero number three was minus one thousandths of an inch, and the departure at two was minus two thousandths of an inch. A. Yes.

Q. Is there any explanation for the difference in clearances between the Marcos Evangelou reading and the reading that you took on the same day? A. Yes.

[&]quot;A" is Allan's initial upon correcting and signing transcript.

Q. And would you tell us what the reason is? A. The bearings were too high, and they were removed [297] and scraped to bring them down to the final reading.

Q. Oh, I see.

The Evangelou reading indicated that the bearings were too high? A. Yes.

- Q. So that you had certain bearings removed? A. Yes.
- Q. Scraped? A. To be exact, number two, number three, and number four.
- Q. Two, three and four were removed and scraped, so that Defendants' Exhibit 15-F shows the alignment readings after all repairs were completed? A. Yes.

[300] A. I am not sure, but I usually took them in company with the chief engineer.

Mr. Kennedy: Mr. Kritzalis, you have the original of this document, and I ask that it be marked at this time as Defendants' Exhibit 58.

(Document appearing to contain alignment readings for the Hellenic Sailor's crankshaft, one for August 16, 1968, the other for December 18, 1968, was marked Defendants' Exhibit No. 58 for identification.)

Q. Mr. Allen, would you examine Defendants' Exhibits 15* A

AD-1 through 4? [NOT IN EVIDENCE]

[&]quot;A" is Allan's initial upon correcting and signing transcript.

Mr. Kritzalis: For the record, these were [301] marked on the examination of Chief Engineer Evangelou.

A. Yes.

- Q. Would you tell us whether they show identical alignment readings for the Hellenic Sailor's crankshaft? A. Yes.
- Q. And these were taken at the port of New York on November 8, 1968, is that correct? A. Yes.
- Q. I notice that the shaft is shown to be in a hogged position. A. Yes.
- Q. Considering the draft of the vessel at that time— A. Yes.
- &. —Is this a desirable condition? A. Well, it is a normal condition.
 - Q. It is a normal condition? A. Yes.
- Q. If the vessel had a draft, the same draft, that is, 13 feet 6 inches forward and 22 feet zero inches aft, would it be normal or usual to find that the shaft had a sag? [302] A. No, not usual.
- Q. Under these draft conditions then, you would expect a properly aligned crankshaft to have a sag, is that correct? A. Within .015, .020 of an inch.

Q. Right.

A sag though, nevertheless. A. A sag or hog, that particular draft.

Q. It could also have a hog at that particular draft? A. Depending on how the bearings were lying.

.

[308]

Q. I hand you another document which is entitled "Main Crankshaft Flex Readings."

Can you identify it?

Mr. Kritzalis: For the record, previously marked Defendants' Exhibit 15-C for identification on Mr. Evangelou's examination.

Q. Do you recognize the document? A. Yes.

Q. Can you tell us what it is? A. It is a crank web deflection readings.

Q. And do you know when these readings were taken?

A. No.

I don't see a date on this.

[310]

Q. I show you a document which has been previously marked as Defendants' Exhibit 5. [NOT IN EVIDENCE] Do you know when this document was prepared?

I think I can help you. I notice the date, February 22, 1968. A. Oh. Well, I can't see it on here.

Q. As a matter of fact, I notice two dates. Another date is December 27, 1967. A. Oh, here. Yes. Here.

Q. Are the crankshaft deflection readings as shown in the exhibit readings which one might expect to find or one might—or leave it one might expect to find in a Sun Doxford? A. Yes.

Q. Four-cylinder engine. A. Yes.

[311]

Mr. Kritzalis: Mr. Allan, I ask you to look at the dates and can you tell from the dates what the vessel's condition was in when the readings were taken?

I am not speaking now of draft, but the physical condition of the crankshaft.

The Witness: I can't. I would have to see the alignment for that time.

Q. I believe Mr. Kritzalis has reference to the fact that between the dates of December 27, 1967, and February 22, 1968, the crankshaft was in a fractured condition, [312] at least, at the number two crank. A. Oh, yes.

Q. Now, would the fact of the fracture in any way affect the readings that are shown on the exhibit? A. Yes, it would.

[334]

By Mr. Kennedy:

Q. Mr. Allan, do you recall when a decision was reached at Port Sudan that temporary repairs of the main engine crankshaft were not possible? A. Yes.

Q. And about what date was that? A. I will give you the exact date.

Mr. Kennedy: Do you know the date on which it was decided that temporary repairs were impossible?

Mr. Kritzalis: I don't know it offhand, so that if he has it it's easier. I would have to go by the GA statement.

A. (Referring to diary) That was February 1.

Q. February 1, 1968? A. Yes.

Q. Was it shortly after that day that the decision was made also to purchase a section of a replacement crank-shaft? A. Yes.

Q. From Sun Shipbuilding? A. Yes.

[335] Q. Did you participate in negotiations in connection with the purchase? A. I went to the shippard and examined the shaft.

Q. That's in Chester, Pennsylvania? A. In Chester, Pennsylvania.

Q. Do you recall how long it took before the replacement crankshaft section arrived at Bombay where permanent repairs were made? A. The date of arrival?

Q. Right, approximate date. A. Yes. Well-

Q. Was it sometime in June of 1968? A. I believe it was.

Q. That's a period then in excess of three months, isn't it?

Mr. Kritzalis: I don't think he has answered the question yet.

Mr. Kennedy: He said he believed it was.

Mr. Kritzalis: I thought you asked for a specific date and he was answering.

Mr. Kennedy: I said sometime in June.

Mr. Kritzalis: Were you looking for a date?

The Witness: Pardon?

[336] Mr. Kritzalis: Were you looking for the date?

The Witness: The date, yes.

Mr. Kritzalis: All right. Thank you.

A. The shaft was removed from the State of Mysore and transported to the ship on the 23rd of June.

Q. So that between the time that a decision was made that the temporary repairs were impossible and the arrival of the replacement crankshaft section at Bombay, we have a period of roughly four months, is that correct? A. Yes.

Q. Was there any reason why four months were required to obtain the replacement, approximately four months that is?

Mr. Kritzalis: I object to the form of the question.

Q. Go ahead. A. The ship, State of Mysore, called at several ports and she didn't arrive until the 23rd.

Q. Do you recall when the tugboat Junak came alongside the Hellenic Sailor for the purpose of towing her to Bombay? A. No. I was not at Port Sudan at the time.

Q. I note from a reference to the translation of [337] the Hellenic Sailor transcript of log which I believe is the deck log, that the Junak came alongside May 1, 1968, and you have testified that the decision to abandon temporary repairs was made I think sometime in early February, February 1, I believe. A. Yes.

Q. Do you know why the Hellenic Sailor was not shortly after February 1 towed to Bombay for permanent repairs? A. I believe she had to discharge the cargo, and also that the crankshaft would not be there in time, and, not having any docks to dock the ship in in Bombay, it was better to leave her in Port Sudan and wait.

.

[338]

I would like to clarify something that I said before about the State of Mysore when she left. The crankshaft was not put on board the State of Mysore until February 4—May 4—excuse me.

Q. May 4? A. May 4. Because they had to machine the crankpins and journals to suit the four-cylinder engine.

Q. Mr. Allan, I hand you a report which apparently was prepared by George Spark & Co., and is dated September 11, 1968. [PLAINTIFF'S EXHIBIT 31, IN EVIDENCE, PAGES 31-41]

Q. Do you know who prepared this report before you? [339] A. Yes, Mr. Potts.

Q. So did you supply Mr. Potts with information concerning what earlier work had been done on the crankshaft in 1948? A. Yes.

[341]

- Q. And Mr. Potts in his report reports that "one bolt was found broken in the way of number three main bearing girder." A. Yes.
 - Q. Do you recall whether this was so? A. Yes.
- Q. He reported also that the remainder were slightly slack. A. Yes.
 - Q. Is that true? A. Yes.
 - Q. When you say yes, I would like to clarify this point.

Mr. Kritzalis: Well, do you want him to clarify his answer or do you want to change his answer?

[342] Mr. Kennedy: No, I don't want to change his answer.

- Q. When you said yes, it's yes, there was a broken bolt found, or yes, he reported that a broken bolt was found? A. Yes, there was a broken bolt found.
- Q. And yes, the remainder was slightly slack? A. Not all of them. A few of them.
- Q. Do you recall how many? A. No. Might have been about twenty or so. By "slightly slack" of course he means that they could hammer it up a little bit, a little more than what it was. It wasn't slack that the nut would come off by hand or anything.

Mr. Kennedy: I move to strike the additional comment. I did not ask the witness what slight slack meant.

The Witness: Sorry.

Mr. Kritzalis: I would like it to stay in the record. You can move to strike it if you like at the trial.

Mr. Kennedy: Well, I will move to strike it.

[344]

- Q. Did Mr. Potts at any time ask you for crank deflection records of the Hellenic Sailor? A. I don't remember, but apparently he did.
- Q. Do you recall whether you gave him any crank deflection record? A. No, I don't recall, but according to this I didn't.
- Q. Did you tell Mr. Potts that the owner did not consider crank deflection records of any particular value?

 A. I told him, but not in those words.

- Q. All right. Would you— A. That's what he understood.
- Q. Would you tell us what you told him then? A. I told him that we could not align the crankshaft [345] from deflection readings. I might say that that is what was done on other engines, but on Doxfords you can't do that.

[348]

- Q. Getting back to my earlier question then, Mr. Allan, I asked if you would agree with the comment of Mr. Potts as it appears on pages 12 and 13 of his report to the effect that the crankshaft of the Hellenic Sailor was running in a sagged condition. You indicated that you did not recall, and I showed you the two exhibits. [349] A. Yes.
- Q. Which you now have before you, and I take it you now agree that the shaft was running in a sagged condition.

 A. Yes.

Mr. Kennedy: Off the record.

(Discussion off the record.)

- Q. Mr. Potts also stated at page 13 of his report that the maximum point of sag was in the way of the number three main bearing. Do you agree with that statement? A. Yes.
- Q. And he said also that this was the point at which the breakage had occurred. Do you agree with that statement? A. Yes.
- Q. And he said also that in his opinion there had been over a considerable period of time a bending stress exerted

at the after end of the number two crank. Do you agree with that statement? A. I wouldn't agree with his statement as a whole.

- Q. I am not taking it as a whole. I am taking it piece by piece, because I would like to find out exactly where you and Mr. Potts part company. [350] A. Yes.
- Q. So far in this section of the report you agree with him? A. Yes.
- Q. Getting back to what I said a minute ago, do you agree with Mr. Potts's statement that there had been over a considerable period of time a bending stress exerted at the after end of the number two crank? A. There's a slight unavoidable bending stress which he doesn't mention. Mr. Potts states, infers here that the bending stress, or he actually states that it was due to the fracture. But that bending stress is always there and it's not running in the sagged condition all the time. When the ship is loaded, we have gone through that, it's in a hogged condition. So Mr. Potts has been ill-informed about this thing.
- Q. You agree then that there is a bending stress exerted at the after end of the number two crank? A. There's a bending stress exerted at all the cranks.
- Q. Is the stress greater at the number three than it might be at other points or other— A. You mean when the ship is sagged or hogged or [351] zero?
- Q. When it's sagged. A. When it's sagged there's a bending stress, and when it's hogged there's a bending stress.
- Q. If there's a greater sag at number three, is that where one would expect the greater bending stress? A. Well, if the sag is greater, yes.

.

[352]

Mr. Kritzalis: When did you leave Hellenic Lines, Mr. Allan? Do you have a date?

Q. Let's make it easier. Were you employed by Hellenic Lines on May 6, 1970? A. I left Hellenic Lines on February 20, 1970.

[353]

Q. Just for the record, Mr. Allan, is there any such thing as a crankshaft deflection reading, or is it a web deflection reading? A. Well, it's usually referred to as crankshaft deflection reading.

Q. Right. A. But it is the deflection of the webs.

[355]

Q. And you are referring now to the statement that Potts attributed to you, that quote "it was not the policy of the owners to take crankshaft deflection" close quote? A. That is completely untrue.

[356] Q. Did you speak to Mr. Cummins concerning Mr. Potts's contention? A. I don't remember that. I don't remember having said that, and I know, it's as I explained before, Mr. Potts was confused when he asked me about the deflections, I told him we did not align the crankshaft with web deflections on the Doxford engine, it's impossible, we have to do it with a wire. That's what I told Mr. Potts.

[357]

Q. I show you a letter, a copy of a letter, rather, [358] consisting of two pages. [DEFENDANTS' EXHIBIT AN,

IN EVIDENCE] It is dated April 13, 1970, and has been produced by the plaintiff, Hellenic Lines Limited.

Mr. Kritzalis: It's in the file, the one I just gave you.

Mr. Kennedy: Would you like to show him the original?

Mr. Kritzalis: Off the record.

(Discussion off the record.)

- Q. I am particularly interested in the handwritten notations that appear on the letter in the margin at the bottom. Look at page one. A. Yes. I have it.
 - Q. Do you know whose handwriting that is? A. No.
 - Q. Might it be Mr. Hennessy's? A. I don't know.
 - Q. Mr. Callimanopulos's? A. No.
- Q. Mr. Burke's? A. I don't know. Do you wish me to read this?
- Q. Do you agree with the statement made, the handwritten statement that appears at the bottom, "Crankshaft deflection not a sure method whereas AR"—and I assume that [359] refers to alignment reading— A. Yes.
- Q. —"are a recognized and universally accepted"— A. I agree.
- Q. —"as"—there's one other word there. "As"—indecipherable—oh, "as being more accurate." A. "Being more accurate."
- Q. Do you agree with that statement? A. If it was complete I would, because it's as being more accurate for aligning the shaft.

Q. Would you refer to the bottom of the exhibit, page one, the beginning of the sentence, "These readings cover the period 1961 to 1968"—

Mr. Kritzalis: Off the record.
(Discussion off the record.)

Q. To begin again, "These readings cover the period of 1961 to 1968; they also make comment upon the 'wear or wiping' of main bearings which would have been shown if the crankshaft had been running in a sagged condition for a 'considerable period of time'. Experience has shown that with bearings which have been in service and therefore have developed a hard surface, they will tolerate a deflection in the crankshaft without being adversely [360] affected." A. I am lost here somewhere. Where is this paragraph?

Mr. Kennedy: Off the record.
(Discussion off the record.)

Q. Do you agree with Mr. Potts's comment?

Mr. Kennedy: And I believe plaintiff's counsel will stipulate that this is a letter written by Mr. Potts.

A. I don't agree—excuse me.

Q. Do you agree with his comment concerning wear or wiping on a bearing that has been in service for a considerable period of time?

Mr. Kritzalis: Have you read the letter, Mr. Allan?

The Witness: I am still reading it.

Q. You have completed your reading? A. Yes.

Q. Would you prefer to have my last question read back to you? A. Yes, please.

Mr. Kennedy: Would you read the question, Mr. Reporter, please?

[361] (Question referred to was read.)

A. I don't quite understand what he's driving at.

Q. So then I gather that you cannot agree with his comment. A. No, I cannot.

May I continue on that and elaborate on this last question?

Q. Well, do you now understand what he's driving at?

A. Yes, I now understand what he was driving at.

Q. All right. Would you then elaborate, if you wish? A. He mentions here about a crankshaft as an example that had been running in a sagged condition for a considerable time.

Q. Which crankshaft are you referring to? A. On another, a ship in their files.

Q. You are referring to the balance of the paragraph?

A. Yes.

Q. Which begins "We have on our files . . . "? A. Yes.

Q. All right. [362] A. And it was only 0.046 out, of an inch out of truth, without any bearing trouble, and he said "and therefore have developed a hard surface, they will

tolerate a deflection in the crankshaft without being adversely affected.

Q. Is that true? A. That's what he says.

Q. Well, do you agree with him? A. No, I don't altogether agree with it. Partly, I agree with it in part.

Q. In what areas do you agree with Mr. Potts? A. I agree that it could run with a 0.046 sag.

Q. Without wearing the bearing? A. Without wearing the bearing or adversely affecting the deflection of the crankshaft. But I don't think in our records we ever let it go 0.046.

Q. Would it make any difference whether the 0.046 was a number three or number two? A. Well, in our case the number three is in the center of the engine, and that's where you would have a larger sag than in the other two.

Q. Well, do you agree then with his comment that the owner very wisely corrected the discrepancy at an early [363] date? A. Oh, yes.

Q. Referring now to the sag of 0.046 inches. A. Yes.

Q. Sir, upon the October 1967 drydocking of the Hellenic Sailor, was her crankshaft inspected in any way? A. In

October 1967?

Q. '67. We know that there was an alignment, a wire alignment reading taken in October of 1967. A. Well, then it must have been checked. For alignment.

Q. For alignment? A. Yes.

Q. Any other inspections made of it while it was in dry-dock? A. I don't believe so, but I am not certain on that point. Had there been any appreciable wear shown by

[364] the bearings, naturally the bearings would have been remetalled* A

removed and remodelled.

[365] Q. I show you a file memo dated November 28, 1966 [DEFENDANTS' EXHIBIT O, IN EVIDENCE], specifically the last page, page three, and ask you if you can identify it. A. Page three?

Q. Yes. Is the document before you a copy of a memo that you sent to Mr. Chrysanthis? A. Yes.

Q. At page three you refer to wire alignment readings. A. Yes.

Q. And you make the comment that they appear to be favorable with due consideration to the ship's draft? A. Yes.

> Mr. Kennedy: Do you have a copy of that in the folder.

> Mr. Kritzalis: A copy of that document you have handed Mr. Allan, memo dated November 28, 1966, is in the Hellenic Sailor Lloyd's Register file number 2 for the period 1965 to end of 1967. There is no Pilgrim wire reading attached to it, and I don't see where it has been marked earlier-I don't think it has.

Mr. Kennedy: Let the record show that we have [366] spent a considerable time looking for a Pilgrim wire reading of the crankshaft, one which might coincide to the date on Mr. Allan's memo, and we have yet to find one.

[&]quot;A" is Allan's initial upon correcting and signing transcript.

Q. Mr. Allan, do you recall the alignment readings that were referred to in your memo? A. I don't remember what—the details of it, but I apparently sent him a copy of it.

Q. And if you had a copy of the detail readings, would one expect to find a copy of one in your files? A. Yes.

Q. In the Hellenic files? A. Yes.

Mr. Kennedy: I call for the production of it. Mr. Kritzalis: How do you know it's the date of November 28, 1966? It's conceivably the one of August 2, 1966.

Q. Mr. Allan, do you recall whether any alignment reading was taken of the Hellenic Sailor's crankshaft between the date August 3, 1966 and November 28, 1966? A. I don't recall, but according to the letter it was definitely sent to the Piraeus office.

Q. I note the numeral 49 next to the paragraph in [367] question. Do you know what that numeral is? A. That means this is cut out and put in file number 49, which is the crankshaft file.

Q. So that a copy of your November 28 memo would be in the— A. Would be in the crankshaft file.

Q. —would be in the crankshaft file also? A. Number 49.

Mr. Kennedy: Mr. Kritzalis, have you checked file number 49?

Mr. Kritzalis: I have, and I hand it to you.

Mr. Kennedy: Is the memo in there?
Mr. Kritzalis: No, it is not in there.

The Witness: It could be cut out of the memo and pasted on another page.

Q. Would one expect to find the alignment record referred to in your memo also in file 49? A. I don't know. I forget whether that was the same file or not. I believe it would be, yes, in the alignment charts.

Q. Might the August 2, 1966 alignment reading which has been marked as Defendants' Exhibit 41-A [DEFENDANTS' EXHIBIT P, IN EVIDENCE] be the reading that you transmitted with your memorandum? [368] A. Yes, could be.

Q. On November 28. A. What?

Q. I am finishing my statement just for the record. A. What is the date on that?

Q. November 28, 1966. A. No, I believe there must have been one after that. That is, after the August date.

Q. And would it have been a reading prepared by Golten Marine Company, Inc.? A. Yes.

Q. And if there was such a reading taken after the August 2, 1966 date by Golten Marine Company, Inc., might one expect Hellenic Lines to have a copy of the bill which they would have received from Golten? A. Yes.

[369]

Q. Mr. Allan, while looking through the main engine crankshaft file for the alignment reading which accompanied your November 28, 1966 memo, I came across a document which refers to the Hellenic Sailor and is dated January 23, 1957. [NOT IN EVIDENCE] I hand it to you

and ask you if you can identify it. A. I can identify it as a chart showing the deflection, the deflections of the crank-shaft taken by wire reading, not NEM-line as it states here.

Q. It's not a NEM-line reading? A. No, it's a wire reading, unless this was done in some other port.

Q. Are the readings as shown on the report satisfactory for a Sun Doxford engine of the type on board the Hellenic Sailor? A. They are acceptable, since they are almost zero.

[370] Q. Would you change your answer if at the time the readings were taken the ship was in a ballast condition?

A. I don't see it. It's not mentioned there.

Q. You mean the draft is not mentioned? A. No.

Q. On the report? A. No, and I don't know what remark I made on this, since there's no draft on it.

Q. So that you really couldn't comment— A. Is this the—

Q. Let me finish. You really couldn't comment upon the desirability of such an alignment without knowing the ship's draft at the time the alignment was taken? A. On this particular one when the alignment was taken, it was satisfactory, because it was almost zero, as you will notice yourself.

Q. And it really makes no difference then in view of these figures whether the ship is in a ballast or a loaded condition? A. No, I will have to repeat, the desirable condition would be that these readings would be on the zero line, for whatever condition the ship is in. And the idea of putting a sag in in ballast conditions is so that it [371] would balance with the hog in the loaded condition. But

if it could be maintained at zero all the time irrespective of the actual cargo in the ship, it would be better.

- Q. But this is not possible? A. It's not possible.
- Q. So that as a general rule you have a sag in the shaft when the vessel is in ballast? A. Yes.
- Q. And you have a hog in the shaft when the vessel is fully loaded? A. Yes.
- Q. And this is a compromise on zero alignment? A. Yes.

[373]

- Q. Mr. Allan, I recall that Chief Engineer Evangelou made the statement when he was examined, oh, several months ago, in connection with this case, that if you have more than a three-foot difference in forward and aft draft of the vessel, one does not get, oh, a very reliable alignment reading. Is that true? A. Well, it's true inasmuch as it would be, the limits between the sag and hog would, could vary with the same load if it's, if we assume that most of the cargo is forward, in other words, that would be, would make the line, the alignment reading show.
- Q. Show what? A. Show a difference from the usual expected reading.

[375]

- Q. Referring to your letter of November 6, 1967 to the chief engineer, you suggested that alignment readings should be taken at the next opportunity with the ship in a fully-loaded and in a ballast condition. A. Yes.
- Q. Do you recall that? A. Yes. I alluded to that several times here.

Q. Did you make this suggestion for the reason that with the ship in those conditions one would get more reliable alignment readings? A. No—yes, more reliable.

Q. More accurate? A. No, not more accurate. More

indicative of what would be required for correction.

[377] Q. Referring to the last paragraph at page three of the same letter, [DEFENDANTS' EXHIBIT AD, IN EVIDENCE] the opinion is expressed that the cause of the crankshaft failure should be directly attributable to the grounding of October 31, 1967, in that this grounding was sufficient to cause a setting up of excessive stresses due to increased deflections of the crankshaft which resulted in rapid fatique and consequent failure on December 24, 1967. Do you agree with this conclusion? A. I agree, I think it's a possibility, a very strong possibility.

Q. A very strong possibility? A. Yes.

[379]

Q. After you learned of the October 31 grounding, did you give any thought or consideration to having the crankshaft magnefluxed or dye checked? [380] A. No.

Q. Prior to the weel's departing New York on its

Indian voyage? A. No.

Q. Had you prior to the time the vessel departed New York received a report from the master of a heavy grounding at New Orleans? A. I don't—

Q.—would you have considered at least having the crankshaft magnefluxed or dye checked before the voyage? This is the voyage commencing from New York. A. No.

- Q. You would not have? A. No.
- Q. And why not? A. It would have, the main reason of course is that it doesn't, the grounding, grounding on ships happens frequently, and it wouldn't pay to dye check the crankshaft every time the ship touches ground.
- Q. So that one would not expect a grounding to affect a crankshaft, isn't that really what you are saying? A. Yes. That's true, I would say.

[382]

- Q. Mr. Cummins in referring to alignment readings states quote "These readings unfortunately were taken with the vessel in various conditions of loading and none were taken with the vessel in a ballast condition." Do you agree that it was unfortunate that no readings were taken with the vessel in a ballast condition? A. Yes.
- Q. And why would it be unfortunate that no such readings were taken? A. They would have had a better idea of the whole alignment and been able to determine exactly how much sag to put in the bearings.
- Q. Referring to the bottom of page two, the statement "Unfortunately the cargo disposition is not known"—and this statement I believe should be read in conjunction with the alignment readings immediately over the statement? A. Yes.

Mr. Kritzalis: Well, the letter should be read as a whole, in truth.

[383] Mr. Kennedy: You will have an opportunity to read the letter as a whole, Mr. Kritzalis.

Q. I am referring to the statement "Unfortunately the cargo disposition is not known." Do you agree with that statement? A. Do I agree? I don't—yes, I agree with it.

Q. Would knowledge of cargo disposition be helpful in determining what the allowable sag or the desirable sag or the desirable departure from alignment zero would be? A. It would help.

Mr. Kennedy: I ask that the-

The Witness: I would like to make one more statement here in case it's misunderstood.

Q. Go ahead. A. I have never seen that ship in ballast, complete ballast condition.

Q. You have never seen it in a complete ballast condition? A. No.

Q. Does the owner have the power to put it in a complete ballast condition?

[384]

A. That wasn't my concern, what the owner does. The ship's there to make money.

[386]

Q. Mr. Allan, the chief engineer, Evangelou, testified that since the spring of 1967 the Hellenic Sailor had on board equipment with which to measure crankshaft alignments. Did she have such equipment prior to that time? [387] A. Only when I brought it. I had to rent it from Golten's.

Q. Is there any reason why in the spring of 1967 the equipment was put on board the ship? A. Yes.

- Q. Why was it? A. Because it cost \$150 every time Golten's did it.
- Q. Did you discontinue using Golten after you put the equipment on board? A. While I was there, yes.
 - Q. While you were there? A. Yes.
- Q. Meaning while you were present on the ship or while you were in the employ of the company? A. I instructed the chief engineers on the four ships how to do it themselves and to do it frequently, which was not possible when Golten's did it. That's another reason.
- Q. But you continued to use Golten after 1967, did you not? A. Occasionally.
 - Q. Occasionally? A. Yes.
- [388] Q. Did the company receive copies of the alignment readings which were taken by the chief engineer on the Hellenic Sailor? A. Yes.
 - Q. From 1967 through 1969 let us say? A. Yes.
- Q. And might one expect these copies to be on file with the company? A. If the copies were sent to the office, they would be on file with the company.
- Q. Do you know whether the copies were sent to the office? A. I don't know.
- Q. Was the chief engineer required to send the copies to the office? A. Yes.
- Q. But you don't know whether he did send the copies to the office? A. Well, he usually did. I used to see most of them. All the chief engineers did.

Mr. Kennedy: Mr. Kritzalis, I call for production of the copies of the chief engineers alignment records which Mr. Allan recalls seeing on file with [389] Hellenic Lines.

Mr. Kritzalis: Do you recall seeing them on file with Hellenic Lines, Mr. Allan?

The Witness: Which? Which ones in particular.

Q We are talking about the alignment records taken with the wire— A. Yes.

Q. —by the chief engineer. A. Well, I don't—if he took them, he would naturally send them to the office.

Q. Would he send the original to the office or a copy?

A. A copy. The original is in pencil.

Q. And would the copy be in ink or in pencil or carbon?

A. No, it would be a Xerox, in ink first and then Xeroxes.

Q. Well, would the chief engineer Xerox it? A. Well, it's given to the agents to Xerox.

Q. I hand you a document which has previously been marked as Defendants' Exhibit 44-A. [PLAINTIFF'S EXHIBIT 25, IN EVIDENCE] It appears to be an alignment

of A

reading taken in pencil. Is this the type A record you would receive from the chief engineer? [390] A. No, that would be, that's the original that's made in the engine room.

Q. Right. Now would you receive a Xerox copy of that original? A. No. He usually would copy that on a piece of clean paper in ink.

Q. Would he copy the diagram also, that is, the lines, the straight line and the lines going from position five to four to three to two? A. Yes, complete, but he wouldn't always put the calculations on it.

Q. And the calculations you are referring to are the—A. Yes.

[&]quot;A" is Allan's initial upon correcting and signing transcript.

- Q. —allowances for sag? A. Yes.
- Q. Wire sag and— A. Yes.
- Q.—journal diameter? A. I don't think the journal diameter is on there. He hasn't allowed for the journal diameters in there.

Mr. Kritzalis: You are referring now to what exhibit, Mr. Allen?
[391] Mr. Kennedy: 44-A.

- Q. I believe you testified that Hellenic owned two other ships with Doxford engines—three other ships? A. Three other ships.
- Q. Were these ships also equipped with Pilgrim wire?
- Q. And was this done also in the spring of 1967? A. Well, it depends when the ships were in port in New York.
- Q. And were the chief engineers on the other Doxford ships also required to submit alignment readings? A. Yes.
- Q. Or copies of alignment readings to the home office?

 A. They were instructed to do so.
- Q. And did they do so? A. Well, some of them didn't. Some did and the others didn't.
 - Q. Evangelou did, did he not? A. Oh, yes.

[392]

Direct Examination by Mr. Ryniker (co-counsel for Defendants):

Q. And when did Hellenic Lines acquire the ship? A. 1954.

- Q. Who were the owners before Hellenic? A. Maritime Belge. That's the Belgian Line.
 - Q. Belgian Line? A. Yes.
- Q. Now the Hellenic Sailor was a C-2, is that correct?

 A. Yes.
- Q. I believe you testified that there were only seven C-2's that were diesel. A. Yes. To the best of my knowledge.
- Q. Now were the engines the same? I mean were they all Sun Doxford engines? A. On the C-2's?
 - Q. On the seven diesel C-2's. A. Yes.
- [393] Q. Do you know what the tons per inch immersion or the TPI of the ship was? A. I don't remember now. I think it was approximately 38 or something like that, if I remember correctly.
- Q. What was the approximate length of the entire crank-shaft? A. Forty—44 feet approximately.
- Q. And the approximate weight I believe you testified was 120 tons? A. Yes.
 - Q. In how many sections was the crankshaft? A. Four.
- Q. Four, so that each one would be approximately 30 tons? A. Each one?
 - Q. Would be approximately 30 tons? A. Yes.
 - Q. Is that right? A. Yes.

[394]

Q. Did the classification society require periodic checks of the alignment in order to maintain the vessel in class? A. I don't believe so. We were never requested to do it by Lloyd's.

[395]

Cross Examination by Mr. Kritzalis:

- Q. Mr. Allan, I believe that you previously testified in response to Mr. Kennedy's questioning that you first learned of the crankshaft fracture on December 24, 1967; is that correct? A. That's correct.
 - Q. You were then sent to Port Sudan? A. Yes.
- Q. I don't have the specific date you arrived at Port Sudan, but can you tell me, putting aside for the moment what date it was,— A. Yes.
- Q.—what you visually saw when you entered the engine room for the first time? A. The front had been removed from the engine, and I saw the fractured crank web with small plates bolted on them that the chief engineer had put there to hold it together.
- Q. When you say the front of the engine had been removed, that was done by the chief engineer? A. By the chief engineer.
- Q. And his assistants, presumably? A. And his assistants, yes.

[396] Q. Could you amplify what the bolts were?

In other words, was this a temporary repair of some sort? A. That was a temporary means of holding the two, the fractured parts together.

Q. Where were the bolts? A. There was an inch and a half thick plate across the fracture and there were two bolts on the top, and there were two bolts on the bottom to hold the two fractures toget? r, the two parts of the fracture together.

Q. This was on the smaller face or the larger face of the web? A. On the smaller face.

[397]

Q. In response to Mr. Kennedy's questions, you testified that temporary repairs were undertaken at Port Sudan. A. Yes.

Q. Were these other than the repairs that the chief engineer tried to effect? A. Yes.

Q. Could you describe the first of these temporary repairs if there were more than one? A. I was going to use the two, two of the side rod crank pin bearing bolts and have them forged flat, welded to the bottom part of the fractured part, and they were four and a half inches diameter and then have a strong back, a forged strong back made, to bolt these through and draw the two broken parts together.

And then I had already started welding plates [398] across the crank webs to make it a rigid shaft.

Q. Could your temporary repair be analogized to putting a vise on the broken crankshaft web? A. I would say it is more in the nature of a clamp.

Q. A clamp? A. Yes.

Q. Did you expect that this would hold permanently?

A. No. To move the ship at slow speed to the next port.

Q. Why did the ship have to go to the next port? A. To discharge the cargo.

Q. Could the ship be repaired at Port Sudan? A. No.

Q. Why couldn't it be repaired at Port Sudan? A. You mean permanently repairs?

Q. Any kind of repairs. You tell me. A. Well, we started with temporary repairs in Port Sudan.

Q. What were the facilities in Port Sudan, just briefly?

A. They were meager. Just a small shop.

[399] Mr. Kennedy: Are you referring to facilities for temporary or permanent repairs?

Q. Any shoreside facilities for repairing marine engines. A. Yes. Very, very meager.

Q. Were they meager for the purpose of permanent repairs or meager for temporary repairs, or both.

Q. What was the answer to that question? A. Both.

Q. Did you dispatch the chief engineer to Greece in furtherance of your temporary repairs? A. Yes.

Q. And why did he go to Greece? A. He took a sheet metal templet of the forging I wished to make, the forging for the clamp.

Q. And why did he go to Greece with it? A. Because it could not be made in Port Sudan.

Q. Was it expected that he would bring back the forging? A. No. He couldn't bring it back. It's going to weigh twelve hundred pounds.

[400] Q. What was he going to do in Greece with this templet? A. To explain to the shippard in Piraeus what our intention was and how to make this particular forging.

Q. And when was it expected that the forging would return to the vessel or be returned to the vessel? A. I think it was about three weeks.

Q. Was an order actually put in, if you know, for this forging? A. No.

- Q. I believe you testified in response to Mr. Kennedy's questioning that these temporary repairs you have just described were discontinued. A. Yes.
 - Q. Were other temporary repairs undertaken? A. Yes.
- Q. Would you describe those briefly? A. That was to sink blocks into recesses drilled in the crankshaft and using the Metalock principle, and then welding a band completely around.
- Q. Was anything physically done to the web in furtherance of these temporary repairs? A. Yes.
- [401] Q. Could you describe that? A. There was a recess drilled in both sides about four inches deep and about five inches wide and probably ten inches long, and the blocks were fitted in there and welded on one end.

Then they were heated sufficiently to lengthen them, expand them, and when they had expanded probably about an eighth of an inch, they were welded at the other end, and the intention was that when these blocks cooled down, it would draw the fracture tight together.

- Q. Are these the repairs that you testified earlier were undertaken by Mr. Van Cooten or Gooten? A. Mr. Van Cooten.
 - Q. Cooten? A. Yes.
- Q. How was metal carved out, if that's the proper word to use, of the crankshaft? A. With a pneumatic drill and oxyacetylene burners.
 - Q. Was it actually done in this case? A. It was done.
- Q. How far did these temporory repairs proceed? A. The blocks were inserted and welded at both [402] ends, and smaller blocks in the face of the crank web were fitted similarly.

- Q. Would that have been the completion of that kind of temporary repair? A. No, he was going to put a band, shrink a band around the entire web.
- Q. Why was it that the band wasn't shrunk around the entire web? A. Because we were ordered to abandon the repair.
- Q. Who ordered you to abandon it? A. No, we found that a further fracture had appeared in the fillet of the journal, and Lloyd's condemned the shaft.
 - Q. Did you find the fracture in the fillet? A. Yes.
- Q. Are you in an opinion to express an opinion as to how that fracture found itself in the fillet? A. Well, it was not in the fillet before the repair, and I believe it was caused by the heating, the extensive heating while the repair was going on.

[403]

- Q. Was it intended that these temporory repairs would allow the vessel to proceed to a port for permanent repairs? A. The first intention was that it would be a permanent repair.
- Q. When was it perceived that these would not be permanent repairs? A. Well, when I, after I told, I think I wrote to Mr. Callimanopulos and told him that it wasn't feasible.
- Q. When you first got to Port Sudan, did you expect that repairs could be effected? A. Well, my intention was to make a temporary repair and run the engine on three cylinders to the next port, and I believed that it would be successful.

Q. I believe you testified earlier that you visited Bombay, you visited Aden, and you visited Karachi, [404] not necessarily in that order. A. Yes.

Q. In trying to locate a yard which could effect repairs for the crankshaft, is that correct? A. That's correct.

Q. Now were these repairs going to be permanent repairs? A. Yes.

Q. Was there any port closer to Port Sudan than Bombay which had facilities comparable to Bombay's? A. No.

Q. Could the vessel have been run on three cylinders [405] to Bombay? A. Yes.

Q. At what point was it that it could have been run to Bombay on three cylinders? A. It could be run on three cylinders providing that a substantial temporary repair was made to the crank web.

Q. The number two crank web you are talking about?

A. Yes.

Q. Why would that be? A. So that she would be—I don't quite understand.

Q. Well, let me rephrase the question.

I believe you testified you were told by the Sun shipyard people that the vessel could operate on three out of four cylinders. A. Correct.

Q. Did they tell you why that was? A. They said that they had experience of doing that before.

Q. And what would happen to the portion of the engine, the crankshaft or cylinder that wasn't in operation? [406] A. The ports, the exhaust and scavenge ports would be blanked off and the connecting rods removed.

Q. I am not the world's expert or even remotely an expert in anything having to do with engines, so bear with me.

Does this mean that you would take the connecting rods off the crankshaft, the broken portion of the crankshaft and that would rotate freely? A. Yes.

- Q. But, to do this, as I understand it, you would have to at least have a crankshaft that would not come apart at that portion. A. Yes.
- Q. And you couldn't do this with the Hellenic Sailor after the temporary repairs of Van Cooten were abandoned, is that correct?

Mr. Kennedy: Objection.

Q. Is that correct? A. Yes. That's correct.

But Van Cooten was going to use the four cylinders. He intended to use four cylinders.

- Q. But he couldn't use four cylinders, and he couldn't use three cylinders, is that correct? [407] A. Yes.
- Q. So, essentially, your trip to Bombay in February of 1968 was for the purpose of—

Strike that.

Let me ask you, what was the purpose of your going to Bombay in February of 1968? A. To investigate the possibility of making the permanent repairs.

- Q. And how would you go about satisfying yourself that the yard had the facilities? A. By inspecting there, the machinery that would be required to do the repair.
- Q. To your knowledge was the machinery able to effect repairs located anywhere closer to Port Sudan, [408] closer

than Bombay I am talking about? A. No, not closer than Bombay.

Q. Would it be fair to say that there were places farther from Bombay that had the machinery? A. Yes.

Q. Did any one ever suggest your using those places?
A. Yes.

Q. Who? A. Mr. Potts and a Mr. Mackintosh, a Lloyd surveyor.

Q. This is the same Mr. Potts you referred to earlier when Mr. Kennedy was asking you— A. Yes.

Q. -about a George Sparks report? A. That's he, yes.

[409]

A. Mr. Potts said he didn't believe that Mazagon dock was capable of doing the repair, and he advised us to move the ship down to either Colombo or Singapore, where the facilities were better, he stated.

[410] Q. Did Mr. Potts state the basis for his belief?

He stated that he didn't believe the Mazagon dock would be capable of doing the repair.

- Q. But did he state the basis of his belief? A. The basis of—
 - Q. His belief. A. No, that was it.
 - Q. That was it? A. Yes.
- Q. What did you say to him? A. I told him I knew we could do it.
 - Q. At Mazagon? A. Yes.
- Q. The port suggested by Mr. Potts was Colombo, and what other one? A. Singapore.

[411]

Q. I believe you testified yesterday that Mr. Potts was attending on behalf of Salvage Association. [412] A. Yes.

Q. Is that the full name of the organization? A. Salvage Association (London).

Q. What is that organization, if you know? A. That is an organization that—employed by the underwriters.

Q. What underwriters? A. As far as I know, it was the hull underwriters, hull and engine underwriters.

Q. Is this the Ships Hull and Engine Underwriters? A. Yes.

Q. Why would they attend at Bombay? A. Because we instituted, instigated a claim.

Q. A claim against Hull Underwriters? A. Yes.

Q. Do you know whether that claim was ever paid by Hull Underwriters? A. I don't know.

Q. I believe you testified earlier, a few moments ago, that Mr. Mackintosh of Lloyd's also suggested that Bombay was inappropriate. A. Yes.

Q. Is that correct? [413] A. That's correct.

Q. Did he also suggest that the vessel go to Colombo or Singapore? A. Yes. That was the result of their conference.

[414]

Q. Getting back to your arrival and stay at Port Sudan in late December, January and early February, 1967-1968,— A. Yes.

Q. —I believe you testified that you examined certain bearings on the Hellenic Sailor, is that correct? A. Yes.

Q. Which ones did you examine? [415] A. Actually, we examined five bearings.

- Q. This would be the top halves and the bottom halves?
 A. Yes.
- Q. I believe you testified that you found them in order, is that correct? A. Yes.
- Q. Did you find any wiping on the bearings when you examined them in Port Sudan? A. No.
- Q. Do you recall when you examined them? A. Well, it takes several days to do it, so I can't tell you exactly.
- Q. Do you remember whether it was in January of 1968?

 A. I believe it was, yes, January.

[417]

Q. Assuming that portion of intact metal at Port Sudan, how was it that you were able to see the face of the fracture, two faces of the fracture in Bombay as you have just testified? A. Well, I had it cut with the acetylene torch.

[418] Q. Where? In Bombay? A. In Bombay, while it was in the ship's hold.

Q. What portion of the face was the bright metal that you described?

Mr. Kennedy: Objection to the form.

- A. It wasn't exactly bright. It was gray.
 - Q. I stand corrected. Gray. A. Yes.
 - Q. What portion was gray? A. The entire surface.
 - Q. The entire surface? A. Yes, ex-
 - Q. Except what?

[419] • • • •

- Q. Could you describe the fracture that you saw that was gray in greater detail since you are the only one here who saw it? A. Yes. It was gray metal all over the whole surface except for a small piece that had to be burned with an acetylene torch.
- Q. Is there anything you can tell me about the texture of the surface of the metal at the fracture I am talking about? A. Only that it was gray clean metal and it had not been polished.
- Q. I show you a photograph and ask you if you can recognize that. A. Yes.
- Q. Can you tell me what that is? A. That is one of the coupons that was cut out, but, where it was cut out, I don't know if this is the one that was cut out originally, because I know I was told that it was lost in England somewhere, the first piece.
 - Q. Is that one of the surfaces? A. Yes.

[420]

A. It didn't appear to have been rubbed together that would have been the case had it been open for a considerable period of time.

- Q. And what makes you say that? A. It would be polished if it had rubbed together for any length of time.
- Q. Are you talking about the surfaces? A. The surfaces of the fracture.
- Q. I assume, then, that these were not polished surfaces. A. No.
- Q. The photograph that is still in front of you, was that one of the surfaces? A. Yes, that was one of the surfaces, a part of one of the surfaces.

Q. A part of one of the surfaces? A. Yes.

Mr. Kritzalis: I would like to have this marked Plaintiff's Exhibit G [DEFENDANTS' EXHIBIT G, IN EVIDENCE] for identification.

[425]

Q. You testified, I believe, in response to Mr. Kennedy's questioning—and correct me if I am wrong—that you were aboard the Hellenic Sailor in New York in November of 1967. A. '67?

Q. Is that-

I am asking you now just to answer my question. Did you so testify in response to Mr. Kennedy's questioning?

A. I don't remember.

Q. You don't remember testifying? A. I don't remember answering that particular question.

[426] Q. You have with you diaries going back how far?

A. Back to 1950-52.

Q. '52 through what year? A. To '70.

Q. Through 1970? A. Yes. With me.

Q. Was it your practice to put down in your diary the names of vessels you attended on? A. Yes.

Q. Would you hand me your diary for 1967, please?

(Witness produces diary.)

Q. Do you recall when the vessel was in dry dock in New York in 1967, in October I am talking about? A. No, I don't recall the exact date or the time.

[&]quot;A" is Allan's initial upon correcting and signing transcript.

- Q. Could you tell us where you were from October 14, 1967, and thereafter until November 18, 1967? A. Well, I was on vacation from October, October 16th until October the 30th, and from—
 - Q. Were you away from the office? A. Yes, yes. I-
- Q. When did you return to the office? A. I returned to the office on the 30th of October.
- Q. Please continue. [427] A. The ensuing dates you mean?
 - Q. Correct.

Let me make it a little easier for you, Mr. Allan. A. I was aboard the M. S. Italia, the Hellenic Pioneer, and the M. S. Livorno to the 31st of October. I was in the office all day on the 1st.

Q. Of November? A. Of November. In the office all day on the 2nd of November. Office all day on the 3rd.

Saturday and Sunday I was home.

Office all day on Monday, the 6th of November.

On the 7th, which was election day, I was home.

I was in the office all day on the 8th of November. Office all day on the 9th of November.

On the 10th of November I was aboard the Hellenic Halcyon, the Hellenic Pioneer, the Livorno, the Hellenic Glory, and the Italia.

- Q. This was in New York? A. In New York.
- Q. At Brooklyn? A. Yes.

And on the 11th I was on the Hellenic Halcyon, [428] The Italia and the Hellenic Glory.

On Monday, the 13th, I was aboard the Italia, the Hellenic Halcyon, and the Hellenic Glory.

On the 14th, I was aboard the Italia and in the office.

On the 15th, I was aboard the Italia and in the office.

On the 16th, the Italia and office.

On the 17th, I was on the Italia, the office, and the Hellenic Halcyon.

Do you wish to carry on?

Q. Yes, please. A. On the 18th, I was aboard the Italia. On the 19th, 20th, and 21st, I was at the office.

[458]

Q. Now, Mr. Kennedy asked you, I believe, if I am not mistaken, either yesterday or the day before yesterday whether you found out about the October 31, 1967, grounding.

Do you recall that question? A. Yes.

- Q. Do you recall your answer? A. No, I don't.
- Q. You don't recall your answer. A. I can't remember.

Mr. Kennedy: Ask him the same question.

Mr. Kritzalis: On cross-examination?

Mr. Kennedy: Sure.

Mr. Kritzalis: I don't think so.

A. (Continuing) I believe I don't, I believe I said I didn't remember when I was first asked about it.

[461] Q. For the record, when were you born? A. 1903. I was 70 last month, this month.

[464]

Q. Now, Mr. Allan, you have testified earlier that prior to your departing for Port Sudan in December of 1967 to

attend the Hellenic Sailor, you communicated with personnel at the Sun Shipbuilding Wetherell Plant in Chester, Pennsylvania.

Is that correct? A. Yes.

- Q. Do you recall the identity of the person or persons you communicated with? A. At that specific date?
 - Q. December of '67. A. Yes. That was Mr. Smith.
 - Q. Mr. Smith? A. Yes.
- Q. Does he have a first name? A. Yes, but I don't re-call what it was.
- Q. Did you visit with him or call him on the telephone? [465] A. No, I went to his office.
- Q. To your knowledge, how many plants at that time anywhere in the world had the facilities for machining crankshafts, machining or constructing crankshafts of the sort found on the Hellenic Sailor? A. Only Sun Doxford for machining them.
 - Q. Only Sun Doxford for machining them? A. Yes.
- Q. This was Sun Shipbuilding in Chester, Pennsylvania? A. Yes, Sun Shipbuilding.
- Q. What about for manufacturing them? A. Well, we did have several bids for manufacturing that throw or that particular crank, and we had them from Italy and in apparently A.

Britain, so finally they could manufacture them.

Q. Were there any other regions from which bids came for manufacturing a new crank section? A. I believe that was the only two.

"A" is Allan's initial upon correcting and signing transcript.

[466]

Q. In terms of cost, getting back to my last question, would it have been more costly or less costly to have a new opposed A.

crank section manufactured as accessed to purchasing one already in existence? A. It was, it would have been more it A*

costly to have them manufactured than purchasing one that was in existence in the shipyard, in Sun Shipyard.

one A*

- Q. Did you say that there was on in existence or the one that was in existence at Sun Shipbuilding. [467] A. Well, the one that was in existence at Sun Shipbuilding, they only had one.
 - Q. Sun Shipbuilding only had one? A. Yes.
- Q. There were no others around to your knowledge?
 - Q. You checked? A. Oh, yes, we checked.
- Q. And the forged part, was that for a four-cylinder engine? A. No, that was for a five-cylinder engine.
- Q. Did Port Sudan have the facilities for machining a new crank section? A. No, absolutely not.

[486]

Cross Examination by Mr. Kritzalis: (cont'd)

Q. Mr. Allan, to what extent did you rely during the course of your service with Hellenic Lines on Marcos

^{* &}quot;A" is Allan's initial upon correcting and signing transcript.

Evangelou? A. I relied on him for anything that was being done to that ship. He was a very reliable and resourceful chief engineer.

Q. This is referring to the Hellenic Sailor? A. Yes.

Q. Do you have any opinion as to his abilities? A. Yes.

Mr. Ryniker: Objection. What is the basis for his opinion?

Mr. Kritzalis: Service with Hellenic Lines for 20 years, service with Evangelou as long as he was with Hellenic Lines.

Mr. Ryniker: How long was he, Evangelou, with [487] Hellenic.

Mr. Kritzalis: As long as he was with Hellenic Lines.

Mr. Ryniker: The same period?

Mr. Kritzalis: Yes. There is a considerable difference in age. I want you to state the basis for your objection.

Mr. Ryniker: I don't think he is qualified to give the opinion.

(Question read.)

A. Yes, I do.

Q. What is it? A. He was a resourceful, extremely resourceful engineer. I would say he was especially resourceful. I judge him by the feats he performed on board this ship.

Q. What feats were those? A. He removed a 30-ton crankshaft section from the engine, cut a hole into the bulkhead of the No. 3 hold with equipment he manufactured

himself and he did this with the aid of his engineers only, with no outside help.

Q. How long have you known Marco Evangelou? A. I don't know the exact dates but I know that when he was first a junior engineer on one of the liberty [488] ships.

Q. Is the Italia identical in any or all respects with the Hellenic Sailor? A. In most respects.

Q. In what respects if any did it differ? A. It had the scavenge pump in the center of the engine, which made the crankshaft about eight feet longer.

Q. Was it a four-cylinder engine? A. It was a four-cylinder engine.

Q. Now, you testified, I believe, on the first day in response to Mr. Kennedy's question as to whether the manufacturers of Doxford engines issue regulations or recommendations with respect to permissible hog or sag.

Do you recall that? [489] A. Yes.

Q. Do you recall what your answer was? A. I said I don't, I don't believe so, I never did see any.

Q. Now, I hand you a document and ask you if you have ever seen that before? A. I don't recall having seen this document before.

Mr. Kritzalis: Can we have this marked Plaintiff's Exhibit M (PLAINTIFF'S EXHIBIT 32, IN EVIDENCE) for identification.

For the record, it is headed Doxford Information Sheet No. 1, October 1960.

(Document headed Doxford Information Sheet No. 1, October 1960, above referred to, marked

Plaintiff's Exhibit M for identification, as of this date.)

- Q. Mr. Allan, I believe you testified that the Hellenic Sailor was purchased from Belgian Line, if I am not mistaken, at least purchased by Hellenic Lines from Belgian Line, is that correct? A. Yes.
 - Q. Is that correct? [490] A. Yes.
- Q. Do you know for whom the vessel was built in 1939? A. Yes. For Moore-McCormack.
- Q. Do you recall whether Belgian Line purchased the vessel from Moore-McCormack? A. I recall that they did not purchase it from Moore-McCormack.

[492]

Q. You have testified at some length about Nem-sight

- readings and telescope readings, is that correct? A. Yes. Q. Can the Nem-sight reading be taken when any of the vessel's auxiliary machinery or the main engine itself is on? A. No. Any—no, it is a ray of light and when those are taken, the whole ship should be, everything on the ship should be stopped.
- Q. Does that hold true for the telescope readings? A. Yes.
- Q. Do you recall when the repairs took place at [493] Port Sudan? A. In 1962?
- Q. That's right. Let me show you a Golten Marine invoice which has previously been marked Defendants' Exhibit 35 (PLAINTIFF'S EXHIBIT 62, IN EVIDENCE) for identification and ask you whether this might help you

refresh your recollection before you go to your diary? A. Yes. It was in October 1962.

Q. Were the repairs commenced in October of 1962? A. No. This invoice shows the time that Golten's men were there.

Q. And it appears to me from reading this that Golten's men performed work on two occasions, October 18-19, 1962 and October 22nd and November 13th of 1962, is that correct? A. Yes. It was partly in New York, I believe.

Q. Would the latter two dates be the dates between which Golten was in Port Sudan? A. I could get that better from my diary.

Q. All right.

Would you at least start with your diary from approximately October 16th, 1962. A. I went to Port Sudan in company of Mr. Haugerstad and two mechanics.

[494] Q. Very good.

Now, when did you first arrive there? A. I arrived there on the 25th of October.

Q. And when were repairs commenced? A. They were commenced immediately.

Q. And when were repairs completed if your diary shows that? Would it have been November 13th? A. On November 6th the ship left Port Sudan and arrived at Djibouti on Friday, the 9th of November.

Q. Is there any reason why the Golten invoice continues through November 15th? A. Mr. Haugerstad stayed on the ship with me until we arrived at Djibouti.

.

[498]

Q. You mentioned alignment readings and the habit of chief engineers then on these Doxford ships to do alignment readings once you had provided them with the Pilgrim Wire equipment, is that correct? A. That's correct.

Q. Do you recall with respect to the Hellenic Sailor and Marcos Evangelou ever seeing prior to the commencement of your examination in this office the alignment readings

done by himself, if any? A. Yes, I did.

Q. Would you tell me when you saw those alignment readings? A. I saw them in this, this room here and it was done on a piece of yellow paper in pencil, a rough copy on a piece of yellow paper.

Mr. Kritzalis: That is not quite responsive to my question and I am going to ask the reporter [499] to read back the question to you carefully and I would ask you to listen to it.

Mr. Reporter, would you read back the question.

(Record read.)

By Mr. Kritzalis:

Q. Did you understand the question? A. Yes.

Q. What is your answer? A. I would say that I don't recall seeing them, but I believe I did see them.

Q. Do you remember when you saw them, if you saw them? A. No, I don't really recall the dates.

Q. Have you ever seen one other than the one I am holding in my hand, Defendants' Exhibit 44-A (PLAINTIFF'S EXHIBIT 25, SHEET 1, IN EVIDENCE) for identification? A. I don't remember.

[501]

Q. I will show you the yellow carbon [PLAINTIFF'S EXHIBIT 26, IN EVIDENCE] in the file No. 49, Mr. Allan, and ask you to read that.

Have you read it? A. Yes.

Q. Now, I have heard you testify, Mr. Allan, to several, at least two reasons, if my notes are correct, as to why you wrote that letter.

Could you tell me why you wrote that letter? A. I wrote that letter as a covering letter to the—the actual chart of the readings, the alignment readings, which was the usual procedure.

Q. Referring to your comments in the first full paragraph, isn't it fair to say that these comments go beyond what a covering letter would contain? A. No.

[502] Q. Could one infer from that first full paragraph that you were concerned about something? A. Well, I was always concerned about the alignment of the shafts on all the ships.

Q. Could I infer reading this that you had a concern about the draft at which the reading that is enclosed with this letter was taken?

Mr. Ryniker: Objection to the form.

Q. Simply, could I infer this from reading is letter?

Mr. Ryniker: Objection to the form.

A. I don't quite see, I don't quite understand the question.

- Q. Simply stated, did you have in mind the vessel's draft at the time that the October 11, 1967 reading was taken when you wrote this letter? A. Yes.
- Q. And could you state now your concern with respect to the draft as you stated it in this letter? [503] A. Yes. May I elaborate?
- Q. I would like you to elaborate. A. Any time when the draft is considerably less forward and aft, the readings are not very accurate, at least they are subject to vary, and in that case it is desirable to take the readings again after the ship resumes a draft showing that approaching the zero line.
- Q. Did you have any other concern when you wrote Defendants' Exhibit 3 [PLAINTIFF'S EXHIBIT 26, IN EVIDENCE] other than the one you just described with respect to draft? A. No, I don't believe so.

[507]

- Q. I believe you testified Friday in response to my questioning that Sun Shipbuilding had the only equipment for the machining of crankshafts the size of the one we are talking about on the Hellenic Sailor, is that correct? A. That's correct.
- Q. Would that have been true in 1948 as well? A. Yes. Except I wanted to add to that. I am talking about crank pins, not journals. Journals could be machined in several of the bigger shipyards but the crank pins could not.
- Q. Are the journals bigger than the pins or smaller than the pins? A. No, but they are in line with each other, [508] whereas the crank pins are stigned, some of them

are 50 inches out of center, which means you can't put them on the lathe for the pins.

[511]

Q. Mr. Allan, I am going to show you from Hellenic's [512] main engine crankshaft damage file the carbon of the telex previously marked Defendants' Exhibit 46 [DEFENDANTS' EXHIBIT AI, IN EVIDENCE]* for identification and I believe the date is approximately January 5, 1968. You may correct me if I am wrong.

Would you read the first portion of that telex to your-self? A. Yes.

Q. Have you read it? A. Yes.

Q. Now, in that, for the record, I will read just a brief portion of it, "Hellenic Sailor presently impossible to examine nature of metal grain in fracture due to it being closed stop alignment and other conditions appear satisfactory." A. Yes.

Q. Now, with respect to the first part of the language I have read, did you ever have occasion to examine the

sending. A

metal grain of the fracture subsequently to the sneding of this telex? A. Yes.

Q. Could you tell me when that was and what you saw?

A. It was in Bombay after we cut through the [513] small part of the web that was still holding and we separated

[•] Thus in the original However January 5, 1968 telex portion of Defendants' Exhibit 46 on Allen's deposition not included with Defendants' Exhibit AI, in evidence.

^{•• &}quot;A" is Allan's initial upon correcting and signing transcript.

the two parts and I saw the fracture as it is shown in those photographs.

Q. Referring specifically to the language in your telex, Defendants' Exhibit 46 [DEFENDANTS' EXHIBIT AI,* IN EVIDENCE], where you state, where you use the words "nature of metal grain"— A. Yes.

Q.—could you describe for me if you can what you saw with respect to the nature of the metal grain in Bombay?

A. I saw the metal grain gray in the crystallized form not** A

and it had—it had A worn together, the two halves had not worn together sufficiently to polish the surface.

Q. Moving on to your statement that alignment and other conditions appear satisfactory, what basis had you at that time for that statement?

Q. And what was the condition of the main bearings, [514] if you knew, at that time? A. They were all good. There was no indication of wearing or wiping.

Q. On each of the five bearings? A. On any of the five bearings.

Q. Are you able to express an opinion as to whether the ships of Hellenic Lines during the period of time you were employed by Hellenic Lines were maintained properly? A. Oh, yes, I can express a definite opinion on that.

Q. What is your opinion? A. And I would say that they were very well maintained. As a matter of fact, the

Thus in the original. However January 5, 1968 telex portion of Defendants' Exhibit 46 on Allen's deposition not included with Defendants' Exhibit AI, in evidence.

^{•• &}quot;A" is Allan's initial upon correcting and signing transcript.

owner insisted on very careful examination at all times and he never, he never limited the expense as far as repairs were concerned.

[516]

Q. I refer you, Mr. Allan, to your letter of January 4, 1968 to Mr. Callimanopulos, to the attention of Mr. Callimanopulos, which has previously been marked Defendants' Exhibit 48 [DEFENDANTS' EXHIBIT T, IN EVIDENCE] for identification, and specifically to the fourth page of that report and the language found at the bottom of the paragraph which is continued on the top of that page.

I believe you state in that letter, "I am certain at this point that the repair will be successful and the ship will be able to discharge her cargo at all subsequent ports."

A. Yes, I see it. Yes.

Q. What was the basis for your certainty as expressed in that letter? A. My consultation with the Sun Shipyard in the first place, and I was sure that the repair when it would be completed would enable the ship to proceed at considerably reduced speed.

Q. Would this be Sun Shipyard's advice, that the [517] vessel could proceed to go on three cylinders? A. Yes.

[524]

Q. Mr. Allan, I am going to show you a document previously marked Defendants' Exhibit 15-A (NOT IN EVIDENCE) for identification.

Mr. Kritzalis: For the record, it is in the [525] Greek language.

- Q. And I believe you have testified that you can't read or speak Greek. I will refer you to the fourth page, which I ask you to study and tell me if you can see any word on that page that you do understand? A. Yes.
 - Q. What word is that? A. Master lock.
- Q. Now, does the word master lock mean the same as or something different from the word metal lock? A. It is a process employed by the metal lock people for severe damages.
- Q. How does it differ from metal lock? A. Metal lock is just the small locks they put across fractures, whereas the master lock they remove metal and place another piece of metal in its place.
- Q. And will you describe the repair operation subsequent to your own which, as I understand it, was to fit a strong back as a master lock operation, or was it a combination master lock and metal lock? A. No, the strong back didn't concern metal lock at all.
- Q. I am not saying that. I am saying after the [526] strong back operations were discontinued, other temporary repairs as I understand your testimony were undertaken? A. Yes.
- Q. And were those master lock, metal lock or both? A. It was metal lock with employing the master lock. It was a metal, a metal lock system, not necessarily the metal lock patentees. It was not necessarily one, was not, you could get the metal lock people to explain that more correctly.
- Q. I refer you, Mr. Allan, to the Potts report dated September 11, 1968, previously marked Defendants' Exhibit 64 for identification, (PLAINTIFF'S EXHIBIT 31, IN EVIDENCE, PAGES 31-41) and specifically the bottom of

page 4 and the top of page 5, where it is written that, "Whilst awaiting delivery of the new crank it was decided to open up the double bottom spaces below the main engine in order to check whether there was any deflection or loosening of the structure. This was done and no defects found. In addition the holding down bolts and chocks were hammer-tested and one bolt found broken in way of number three main bearing girder whilst the remainder were slightly slack." A. Yes.

[527] Q. Were you with Mr. Potts when he made that examination of the holding down bolts? A. Yes. Part of the time.

Q. Do you have any idea the number that Mr. Potts is talking about when he refers to "the remainder were slightly slack"? A. Probably about 300 or in excess of 300.

Q. What do the words "slightly slack" as set forth at page 5 of Defendants' Exhibit 64 connote to you? A. It meant that they put a wrench on the nut and they could hammer it up slightly, hammer up the nut slightly.

Q. How slightly? A. Well, maybe about ten degrees.

Q. To your knowledge, were the holding down nuts either hammer-tested or tightened up at any time between November 18, 1967 and the time that Mr. Potts made his examination? A. I don't know but I don't believe so.

[532]

A. It would tell me that the shaft was almost perfect in the light condition.

719a

Deposition of Charles Allan

- Q. This is with respect to alignment? A. With respect to alignment.
 - Q. Would they tell you anything else or would that be two A*

all they tell you? A. You mean these too?

- Q. Correct. [533] A. That's all.
- Q. That's all. A. Yes.

[536]

Q. And could you tell me what you told Mr. Potts and when you told it to him? A. I told Mr. Potts that the crank web deflections were of no particular value for making a

shaft alignment.

I did not say that they were of no particular value altogether. So as a matter of fact they are essential.

- Q. On other than Doxford diesel engines what is the normal way for aligning a crankshaft? A. By taking crank web deflections.
- Q. And I believe it was your testimony that with respect to Doxford engines that is not the method for taking proper alignments? A. No. It is impossible.

[537]

Q. Do you recall having any difficulty, if I might use that term, with the main bearings subsequent to Port Sudan repairs in 1962 up to and including November 18, 1967?

Mr. Kennedy: Which main bearing? Mr. Kritzalis: All five main bearings.

[&]quot;A" is Allan's initial upon correcting and signing transcript.

A. We realigned the shaft in Port Sudan in 1962 I believe. I would have to check the exact date.

Q. What I am asking you- A. Since that.

Q.—is if you did have any problem since then up to and including November 18, 1967 with each or any of the main bearings? A. I don't remember but I don't believe so.

Q. Referring to that Potts report before you, and the language at page 3 where it states "We are informed that the shaft has been built up with welding, annealing, machined and reshrunk at the time mentioned in the foregoing stamping," and the foregoing stamping being the one of 5 January 1948, were you the one who informed Mr. Potts of that fact? [538] A. Yes.

Q. In your opinion would the welding, annealing, machining and reshrinking of which you informed Mr. Potts at that time have had anything to do with the fracture which occurred on December 24, 1967? A. No, it did not.

[540]

Q. I refer you to the last paragraph at page 2 of Defendants' Exhibit 67 [DEFENDANTS' EXHIBIT AO, IN EVIDENCE] for identification, where it states, "In the case of the vessel in question we find that, according to the owners, the vessel operates fully 70 per cent of the time either in a loaded or a partially loaded condition," and I am leaving out the balance of that sentence. A. Yes.

Q. Do you agree with that statement that the vessel Hellenic Sailor operates fully 70 per cent of the time— A. Yes, I will say approximately, yes.

[541] Q. You would say approximately fully 70 per cent of the time? A. Yes.

- Q. She is loaded? A. Yes.
- Q. Or partially loaded? A. Yes.
- Q. I refer you to Defendants' Exhibit 68 for identification, which is Mr. Cummins' letter to Hellenic Lines, this time to the attention of Mr. T. G. Burke, and specifically page 2, and Mr. Kennedy's questioning of you with respect to the use by Mr. Cummins of the word "unfortunately" in two instances, the first instance where he says, "These

A*

readings unforatunately, were taken with the vessel in various conditions of loading and none were taken with the vessel in a ballast condition," and further on down page 2 where he says, "Unfortunately the cargo disposition is not known."

Now, first wouldn't it be more fortunate if alignment readings are to be accorded some weight—

[542]

.

- Q.—that the vessel be in various conditions of either loading or ballast? A. That's desirable.
 - Q. It is more fortunate? A. It is more fortunate.
- Q. Wouldn't it be more fortunate if the cargo disposition were known each time an alignment reading was taken in order to accord that alignment reading more weight? A. Yes.
- Q. Let me read you what Mr. Cummins said further on down page 2 where he says, "If the crankshaft had been

[&]quot;A" is Allan's initial upon reading and signing transcript.

running for a considerable period of time in a sagged condition certainly some evidence of wear or wiping of the main bearings would have been found. This was not the [543] case in this instance when surveyed at Bombay.

Do you agree with that statement? A. Yes.

- Q. And were you present at Bombay? A. Yes.
- Q. Was any wear or wiping found? A. No, not at all.
- Q. To your knowledge is the cargo disposition ever known to Golten when they make wire alignment readings? A. Well, all they know about that is the draft forward and aft. They don't know the exact position of the cargo.

[549]

Q. Mr. Allan, could you recall whether at Port Sudan, in 1962, in October and November of 1962, whether the bearings or any portion of the bearings were replaced, physically replaced? A. Yes. There was four of them replaced.

Q. Would this be the bottom half? A. Bottom half shells.

Q. Top halves or both? A. No, bottom half, the shells.

Q. Where were the replacements for these bottom halves found? A. Sun Shipyard, Chester, Pennsylvania.

Q. How were they transported to Port Sudan? A. By plane.

[550] Q. Were you aboard the plane that transported them? A. Yes, part of the way with them.

Q. How much does each of the bottom halves weigh?
A. 900 pounds.

Q. Were the Hellenic Torch and Hellenic Glory purchased new by Hellenic Lines? A. Yes.

Q. Where did delivery take place? A. Glasgow, Scotland.

[571] • • •

Redirect Examination by Mr. Kennedy:

Q. Mr. Allan, you testified concerning a plan you had for making temporary repairs on the crankshaft in 1968.

After you learned of the fracture— A. Yes.

Q. —did you not have a plan to make temporary repairs?

A. Yes.

[572] Q. You expected that a forging would be made at Piraeus? A. Yes.

Q. That would take about three weeks? A. Yes.

Q. Was the repair plan that you had recommended ever been followed by Hellenic Lines? A. No, it was abandoned part of the way through.

Q. What was the reason it was abandoned? A. I don't know. I believe that the reason was that the experts in New York had devised another means which would be more of a permanent nature.

Q. Did you participate in the decision to abandon the repairs that you had initially planned? A. No.

Q. Were you consulted at all? A. No. I was in Port Sudan when the experts decided on this.

Q. Now, the more permanent repair that you have described, was that the metal lock repair? A. Yes.

Q. And this was to be undertaken by Mr. Van Kooten? [573] A. Right.

Q. And it was during this repair that other fractures developed in the web? A. Yes—in the forging in the way of the fillet.

Q. In the forging in the way of the fillet?

Mr. Kritzalis: Did you refer to fractures, plural, or fracture?

- Q. Fracture. Fractures or fracture? A. Fractures.
- Q. There was one other that developed? A. Yes.
- Q. And as a result of the repairs that were developed the metal lock repair was abandoned? A. Yes.
- Q. Did you have an opinion as to whether the repair plan that you had devised should have been abandoned in 1968?

 A. I did have an opinion.
- Q. Tell us what the opinion was. A. I did not think they should have been abandoned.
- Q. Did you receive a communication of some kind [574] directing you to abandon these repairs? A. Yes.
- Q. Do you know whether it has been marked for identification during your deposition? A. I don't, I don't remember.
- Q. When I asked you the question, you picked up your diary.

Would you check your diary to see whether you could tell us when you received instructions to abandon repairs that you had contemplated? A. Yes, it was on January 7, 1968.

[586]

Q. Do you know when the Hellenic Torch and Hellenic Glory were purchased by Hellenic Lines? A. Yes.

Q. Could you tell us when it was? A. It was in 1956.

[589]

Q. In response to one of Mr. Kritzalis' questions you stated that Lloyd's condemned the crank section because of welding scars on the crank shaft.

Mr. Kritzalis: I object to the form of the question. That's not what he said.

Mr. Kennedy: Do you want to go back to the record to find out what he said?

Mr. Kritzalis: Sure.

Q. Do you recall this testimony? A. Yes, I recall that.

Q. You did say that? A. Yes, I did.

Mr. Kritzalis: Does your testimony reveal that it was the welding scars or does it reveal that it was the crack that was found in the fillet, the second crack.

The Witness: That was the condemned, the [590] forging part, but there was a question arose whether we could use the rest of the crankshaft and shrink a new forging into the original web.

Mr. Kritzalis: I see.

The Witness: And that possibility was dismissed by Lloyd's in Bombay because there were welding scars in the web and he thought it may be something that may start another fracture.

[603]

Q. You testified concerning Mr. Potts' contention that owner did not believe crank web deflections were of any particular value? A. Yes.

Q. And I believe you said that crank web deflection readings are essential? A. Yes.

Q. For what purpose are such readings taken? A. To insure that the deflection is not too great due to the possible misalignment.

Q. Would a deflection which you characterized as being too great also cause the crankshaft to be subjected to additional stress during its rotation?

A. Yes.

[604] Q. Do you know at what point one might consider a crank deflection as too great?

[605]

A. Do you mean while the shaft is in motion or while it is static?

Q. While it is in motion. A. Well, I have been told certain oral statements and I wouldn't repeat them. But I know it is permitted.

Q. Who told you? A. I was told by one of the engineers in the Sun Shippard.

Q. You are not willing to repeat what he told you? A. I wouldn't repeat the oral statement. But I use it for my own guideline.

A. Well, I did tell you on my first, initial examination, I went through that and told you what it was after the stroboscopic examination and it must be on the record. As a matter of fact, I said with full load on the dynamometer and the test pad the center crank had an [606] excess of one-eighth of an inch.

Do you recall that?

Q. No, I don't recall that.

- Q. At what point would the deflection be considered too great under a static condition? A. Any deflection is too great.
 - Q. Under a static condition? A. Yes.
- Q. Is any deflection too great under a motion condition or moving condition? A. Any deflection is too great, because there are stressed but it is unavoidable. They are there.
- Q. I hand you a document which you may recognize as having come from Hellenic's file.

Now, do you recognize it?

Mr. Kritzalis: May I see it, please?
Off the record.

(Discussion off the record.)

Mr. Kritzalis: I am going to allow it to be [607] marked for identification but I am going to direct the witness not to answer any questions on it.

Mr. Kennedy: Would you state the reason for your direction to the witness?

Mr. Kritzalis: I don't have to state any reason for my direction to the witness.

Don't answer questions on it.

To you we will state this is not matter brought up on direct or cross-examination.

Thus in the original. Should be "stresses".

Mr. Ryniker: We reserved all objections except as to form. The judge has to rule on that.

Mr. Kritzalis: We can be here all day, tonight and tomorrow. Mr. Kennedy had ample opportunity to put in all matters. The documents have been in this room since last Wednesday and I am not going to allow this examination to continue on new matter.

Mr. Kennedy: This is not new matter.

Mr. Kritzalis: It is new matter.

Mr. Kennedy: You brought this crank deflection in on your cross-examination.

Mr. Kritzalis: It was referred to then in the language in Mr. Potts' report which was put in by yourself. If you wanted to ask about stuff like this, [608] you had ample opportunity. Nobody told you to terminate your direct on Friday. You terminated your direct examination yourself. You have seen these documents since March, you have conducted a three-day direct examination. The witness has been here now the fourth day and now you are bringing in new matter. The fact I referred to crankshaft deflections as referred to in the Potts letter, an exhibit marked by yourself and try to correct a statement made in that report with respect to the witness' assertions in September of 1966 is one thing, but now you are bringing up an entirely new matter.

Mr. Kennedy: Your witness volunteered the statement that web deflection readings are essential.

Mr. Kritzalis: I am allowing, as of course is your right, to have the document marked for identification but I am going to direct the witness not to answer

and I will be happy to go up to the judge for a ruling because you are going into matters which are beyond direct and beyond my cross-examination. And if we have to wait for the transcript [609] to come back in final form to make any appropriate applications, I will do that, but you could be here all day pulling out new documents and I am not going to let that go on.

Mr. Kennedy: Just note on the record that I reserve my right to continue this examination with respect to that document.

Mr. Kritzalis: And please mark the document.

Mr. Ryniker: Exhibit 71.

Mr. Kennedy: I will proceed now to continue my examination on redirect.

(Letter on the letterhead of Sun Shipbuilding & Drydock Cempany to American Bureau of Shipping, dated September 14, 1960, above referred to, marked Defendants' Exhibit 71 for identification, as of this date.)

(Drawing above referred to marked Defendants' Exhibit 71-A for identification, as of this date.) [BOTH MARKED DEFENDANTS' EXHIBIT K, IN EVIDENCE.]

By Mr. Kennedy:

Q. Mr. Allan, you testified that a crankshaft in a Doxford engine is in fact expected to last the life of the vessel. [610] A. Yes.

Q. If you know, can you tell us why the crankshaft on the Hellenic Sailor did not last the life of the vessel? A. I don't know.

Q. Might the fact that it had been operated with a sag or a hog have contributed to its demise?

A. Well, yes.

[611]

.

Q. With reference to Defendants' Exhibit 67, you testified that you agreed with the comment of Mr. Cummins regarding the flexibility of the hull and the engine bed plate.

Do you recall that testimony? A. Yes.

Q. The letter, as I recall, reported a range of .016 inches to .042 inches deflection at the No. 3 bearing.

Do you recall that reading or those readings? A. I don't recall the exact readings.

- Q. I hand you the letter and refer to the portion of the paragraph which appears directly under the deflection readings that appear on page 2. A. Okay. Yes. I agree with that.
- Q. Does the range of .016 to .042 inches indicate also a certain flexibility in the crankshaft? A. Yes. And the flexibility in the entire bed plate.
- Q. And is this range of flexibility desirable? A. The only desirable feature would be if it is zero.

[612] Q. So then is your answer that it is not desirable?

A. It is not a case of being desirable. You mean is it acceptable?

Q. No, I have asked you if it is desirable and your answer is that zero is desirable. A. Zero is desirable.

- Q. Right. A. And any deviation from zero whether it is only two thousandths of an inch is acceptable. Not any deviation to the limits as shown in this.
- Q. The classification society, does it publish any recommendations or any regulations with respect to permissible or allowable crankshaft alignment on Sun Doxford or Doxford engines generally? A. If they do I have never seen them.
- [613] Q. Do you know when the continuous survey machinery was begun again after it was completed on March 8, 1966? A. It would probably be in 1970, four years after.
- Q. It would be completed four years afterward? A. Yes.
 - Q. My question was when did it begin. A. Immediately.
- Q. As part of the continuous survey machinery completed on March 8, 1966, was the crankshaft alignment checked? A. I don't remember.
- Q. Was the crankshaft web deflection checked? A. I don't remember.
- Q. Would you expect that as part of this continuous survey the crankshaft alignment and the crank web deflections would be checked? A. No, I have never been requested to make a shaft alignment by the classification societies, neither Lloyd's nor the American Bureau.

[618]

By Mr. Ryniker:

Q. Mr. Allan, was the Italia built in the United States?
A. No, she was built in Canada, Montreal.

[624]

- Q. I believe you have testified previously that the significant factor when taking crankshaft alignment readings, the most significant factor is the draft of the vessel. A. Yes.
 - Q. Is that correct? A. Yes.
- Q. Now, what factors other than cargo disposition would affect the draft of the vessel? A. Well, cargo disposition can be taken in several ways and one of course would be to have the loads equally disposed over the entire surface of the cargo holds, and the other would be if there were heavier loads in one part of the holds than there would be in the other, but still having the same total load that would make the submergence the [625] same.
- Q. The distinction you are referring to, would that be generally the trim of the vessel? A. Well, it would be the trim, of course.
- Q. So would you say, sir, that with respect to these alignment readings, that the two significant factors, or two significant, any two significant factors, are the draft and the trim of the vessel? A. Yes. Well, the draft would be the trim.
- Q. Well, what I am referring to when I used the word trim is the difference between the fore and aft draft. A. Yes.
- Q. Is that your understanding of it? A. Well, I would say the trim, that you can trim [626] a vessel forward and aft or port and starboard.
- Q. In your understanding, sir, do the terms partly loaded and party ballasted mean the same thing in certain cir-

cumstances? A. Yes, the ballast could be considered as a load.

- Q. In other words, if I were to use the term the vessel was partly loaded— A. Yes.
- Q.—and someone else were to use the term the vessel was partly ballasted— A. Yes.
- Q.—we could both be referring to the actual condition of the vessel? A. Yes, the actual condition would be the same, except that you can ballast amidships under the engine, as necessary.

[628]

/s/ CHARLES ALLAN Charles Allan

Subscribed and sworn to before me this 28 day of November, 1973.

/s/ Guy E. C. Martland
Guy E. C. Maitland
Notary Public, State of New York
No. 31-2482900
Qualified in New York County

Commission Expires March 30, 1975

Deposition of Marcos Evangelou Taken by Defendants on May 31, June 1 and 2, 1973.

[21]

Marcos Evangelou, representing the Plaintiff herein, called as a witness by defendants, being first duly sworn by the Notary Public (Solomon Geller) and stating his residence as Sachtouri, 59, Piraeus, Greece, testified (through the interpreter) as follows:

Examination by Mr. Kennedy:

Q. During Voyage 35, and at the time when the vessel was at New York, do you know whether Mr. Allan entered the engine room? A. He always enters the engine room.

Q. Do you know whether he made any inspection of the main engine on those occasions? A. If this was necessary.

Mr. Kritzalis: "Indispensible," he said.

Q. If it was indispensible?

The Interpreter: If it was necessary.

Mr. Kritzalis: "Necessary." Mr. Kennedy: Off the record.

(Whereupon, at this time, a discussion was held off the record.)

A. No, he did not make any inspection.

[23] • • • •

- Q. Did you take any readings at Philadelphia? A. Yes.
- Q. Did you make any record of such readings? A. Yes.
- Q. Do you have that record with you today? [24] A. No.
- Q. Did you record the readings in the vessel's engine log? A. No.
- Q. Did you send the record of these readings to your employer? A. Yes.
 - Q. Did you send them to Mr. Allan? A. Yes.

[29]

- Q. Did the shaft on the Hellenic Sailor during your time on board, generally run in a hog or in a sagged condition?

 A. Sometimes with hogging, sometimes with sagging.
- Q. You said there was nothing unusual about a hog. Was there anything unusual about a sag? A. Of course.
- Q. I asked you if there was anything unusual about the shaft running in a sagged condition. A. This is a normal condition.
- Q. What would determine whether the shaft would be in a sagged or in a hogged condition? A. When the ship is fully loaded, generally the crankshaft have to run in hog. When the ship is in ballast condition, the crankshaft normally shows sagging.
- Q. At Philadelphia, do you recall whether the ship was in a ballast or in a fully loaded condition? A. I don't think there was a condition of ballast, because New York was our last port, and normally we ran on full cargo. New Orleans, Houston, Jacksonville and Philadelphia, the ship was loaded.

[42]

Q. Thank you.

You have testified, sir, concerning alignment measurements that you took from time to time on the Hellenic Sailor. Did you at any time take deflection readings?

A. For what period do you mean, sir?

- Q. During the entire time you were on board the Hellenic Sailor. A. Only at Port Sudan.
- Q. What date was that, approximately? A. In February of 1968.
- Q. Did you yourself personally take these readings?
 A. Yes.
- Q. What type of equipment did you have available to use to take these readings? A. There is a special instrument for deflection measurements, for taking deflection readings.
- Q. Was this special instrument carried on board the HELLENIC SAILOR from the United States or did someone supply you with the instrument at Port Sudan? A. It is given by the manufacturers of the engines.
- [43] Q. Do you know when this equipment went received on board the Hellenic Sailor? A. When Callimanopoulos picked up the vessel.
- Q. Did you make any written record of the Port Sudan deflection readings? A. Yes.

[44]

Q. Sir, you testified this morning, that on November 13th, the log book—and now I am not sure whether it is the deck log or the engine log—

Mr. Kritzalis: Engine. Mr. Kennedy: Engine?

[45] Mr. Kritzalis: Rough engine.

Q. -rough engine-contains a notation that alignment readings were taken on that date. A. Yes.

Q. Did you take the alignment readings because Mr.

Allan had asked you to? A. Yes.

- Q. Did you understand the letter of November 6th, which has been marked as Defendant's Exhibit 3 [PLAINTIFF'S EXHIBIT 26, IN EVIDENCE] for identification? Did you understand this letter of Mr. Allan to be a request to you to take the alignment readings? A. Of course. These are instructions.
- [47] Q. With respect to alignments on a Sun-Doxford crankshaft, are there maximum departures from alignment zero which are permitted in the operation of the crankshaft? A. Sure.
- Q. Do you know what these maximum departures are? A. Not what they are. How much they are.
 - Q. How much they are? A. No.
- Q. You testified to a finding of alignment thirty thousandths of an inch earlier. Do you know whether such an alignment is permitted? A. Yes.
- Q. You testified also that the alignment of thirty thousandths of an inch in this particular instance was indicative of a hog in a shaft. A. Yes.
- Q. If in a given case the thirty thousandths of an inch reflected a sag, would that be permissible? A. To be sure.

Q. Do you know whether a Sun-Doxford crankshaft such as the one on board the Hellenic Sailor could operate safely at an alignment departure of sixty thousandths of an inch?

[48]

Q. An alignment departure from zero at sixty thousandths of an inch. A. Listen to me.

There are three areas: the first segment reflects the normal operation of the crankshaft.

The Witness: I will answer the question.
[49] Mr. Kennedy: Answer it then.

A. Yes.

Q. The answer is yes? A. Yes.

Mr. Kritzalis: What was the question?

The Witness: The answer is yes.

Mr. Kennedy: You could operate a Sun-Doxford

shaft at .060 of an inch?

Mr. Kritzalis: From zero?

Mr. Kennedy: From zero, yes.

Q. From what point zero would you not be permitted to operate a Sun-Doxford? A. I don't know.

Q. Referring to Mr. Allan's letter, Defendant's Exhibit 3 [PLAINTIFF'S EXHIBIT 26, IN EVIDENCE] for identification, he comments:

"It is important to observe the ship's draft while the readings were taken, and with twelve feet six inches for-

ward, the ship would be in a comparatively light condition, causing the deflection to be below the zero line, although the figures show an access . . ."—I am quoting the word "access" as used rather than the word "excess" which I believe is intended—". . . over the desirable measurements."

Do you know what the desirable measurements are [50] or should be? A. Not exactly.

[55]

Q. Is one method of measurement more accurate than the other? [56] A. That of the telescope is more accurate.

These changes that we are talking about are just only this thick (indicating).

[70]

Q. Did you have an occasion shortly after the crank-shaft fractured to examine the chocks and bolts and [71] whatever else was in the way of the bed plate? A. Certainly.

Q. What did you find? A. In reports that I sent to the New York office, the bearings, the white metal, generally the nuts, the condition of the cranks of the crankshaft were found to be in satisfactory condition.

[154]

Examination by Mr. Kritzalis:

Q. Did you at that time see anything abnormal about the white metal of the main bearings? A. When I saw the main shaft broken, I immediately began—and I was

at the engine room for some seventy-two hours—to check not any more just visually the main bearings but by removing them from their positions. And, if I remember correctly, on the 27th of December, I sent a cable to our company that all the bearings of [155] the main engine are in excellent condition.

Q. Was that cable sent to the New York office or to the Piraeus office? A. To the Piraeus office.

Q. Subsequent to December 24th, 1967, what specific inspections did you personally make of the main bearings and when?

A. While the vessel was at Port Sudan, and after the disapproval of the Lloyd inspector of this crankshaft section that was broken, I received instructions from New York by means of cables, to conduct a general dye check of the crankshaft of the main engine.

These inspections that I conducted as well as the measurements were sent by me to the New York office.

[156]

Q. My earlier question was specifically with respect to the condition of the main bearings. A. The condition of the main bearings was found to be satisfactory. This is also shown in the report I sent to New York as well as in the cable that I sent to the Pireaus office.

Q. We will get to your report in a moment.

My earlier question which still stands in the record and to which, I believe, there is not an answer, is, what inspections did you personally make of the main bearings following the December 24th, 1967 inspection and when

were they? A. I already answered this question earlier that on December 27th, I had removed the bearings from their positions and I checked them and I then cabled the Piraeus office with respect to their good condition.

[177]

Q. Briefly, could you describe to me what the deflection method is? A. The word "crank" itself consists of two webs and the pin. Let's say that these are the webs and this is the pin (indicating). Across from the pin and in the middle of the webs, we place a special measurement. Starting from the top dead center point, we regulate at the top dead center point our instrument to show zero and then we cause the engine to turn by means of the turning gear and every ninety degrees, we read on the gauge how much it says.

If the gauge shows a plus factor, the webs between themselves, close. If it shows a minus factor, the webs, between themselves, open up.

The same work is accomplished on all four ninety degree sections, so that the three hundred and sixty degree circle can be completed.

Q. With respect to the Sun-Doxford type Diesel engine, is that alignment reading or the deflection reading preferable to your knowledge? In other words, which of the deflection reading or alignment reading is [178] preferable for the purpose of measuring the alignment of the crankshaft? A. The deflection method is the first method observed and this one was used and is still used by the Diesel manufacturers.

Especially for Doxford engines, the wire alignment or telescope alignment method produces better results.

[179]

Q. Yesterday you testified that you took a wire alignment reading at Philadelphia on, I believe you said, and I may stand corrected, November 13, 1967? A. Yes.

Q. We don't have that alignment here. Is it possible that a copy exists presently on board the ship? A. Probably.

Q. Do you know where the ship is now? A. As best as I know, it is now working the African Mediterranean route.

Q. Do you know whether she is scheduled to be sold soon? A. Yes.

Q. How soon? A. Probably three or four months from now.

Q. Where? A. To Greek ship-owners.

Mr. Kennedy: Mr. Kritzalis, will you agree to produce the alignments referred to?

Mr. Kritzalis: Before the interruption, I was going to ask the chief engineer on his return [180] from Piraeus, to see if they exist and if he can get them.

I cannot give any guarantees.

Mr. Kennedy: I point out that the broad demand for documents that the defendant's made included alignments and deflection readings and the document should have been produced before this examination.

Mr. Kritzalis: I would state for the record that you are certainly well able to make a motion for any protective order you choose.

I have not seen it. We will do our best to get it. If it exists, it will be found.

Q. Will you, when you return to Piraeus, get for us a complete copy, if you can, and if it can be found, of any folder which contains alignment readings from the ship? A. With pleasure.

[181]

- Q. Do you recall, yesterday, that you were asked whether you knew what the maximum permissible deflection in the Hellenic Sailor's crankshaft would be? A. Yes, I was asked.
- Q. Do you recall what your answer was? A. That, I don't know.
- Q. Would you know whether, with respect to the Hel-Lenic Sailor, insofar as your experience in taking alignments with concerned, whether there were permissible ranges figures for deflection, either hog or sag?

[182]

Q. Will you answer the question. A. Yesterday I was asked if I knew the maximum deflection and I said no.

If you ask me now whether I know the permissible or the reasonable deflection down and up, I tell you that the reasonable one, the normal one for a Doxford engine to work with is forty thousandths of an inch.

Q. When you say "normal" you mean from zero to forty-thousandths of an inch? A. Yes.

- Q. Would this be the HELLENIC SAILOR? A. Yes, of course.
- Q. Would there be any other range? A. There are three stages. The first stage is the normal which reaches up to forty thousandths of an inch.

The second stage where the engine operates with [183] safety, again, is sixty thousandths of an inch.

The third stage, the engine enters a stage of permanent disfigurement in which case the crankshaft is likely to break, but, as I said, I don't know what that point of no return is for me to translate into thousandths of an inch.

- Q. Do you recall whether, from the readings taken by you, or reviewed by you—and I am speaking now of wire alignment readings of the Hellenic Sailor's crankshaft—during any time aboard during your service as Chief Engineer, whether the wire alignment readings were within the danger zone which you have categorized? A. No, it was never found in that situation.
- Q. Chief, I refer to the letter which was marked yester-day as defendant's exhibit 3 [PLAINTIFF'S EXHIBIT 26, IN EVIDENCE] for identification which is Mr. Allan's letter of November 6, 1967 which you stated, I believe, you received at Philadelphia, and I hand you also the defendant's exhibit 4 [PLAINTIFF'S EXHIBIT 23, IN EVIDENCE] which is the October 11, 1967 alignment readings (handing to witness).

I ask you, first, with respect to the alignment reading, whether this, in your opinion, and specifically the readings, were within one of the stages which you have characterized. [184] A. Yes, it was between the first two stages that I described.

Q. Didn't you say earlier that the alignment readings taken on October 11, 1967 were in a mostly ballast condition? A. Yes, it was almost ballast.

Q. Would the fact that the readings were taken when the ship was in such condition—and I am speaking again of the October 11, 1967 readings—in your opinion, account for the letter dated November 6, 1967 of Mr. Allan?

Q. You may answer. A. In part, yes.

In order for a correct alignment measurement to be accomplished, there should be no more than two or three feet in the draft differential between aft and forward.

Whereas, in the present diagram, we have a draft difference of ten and a half feet.

Q. You are referring now to the diagram of October 11, 1967? A. Yes.

[191]

Q. When did you get your Chief Engineer Diesel license?

A. In March of 1969.

Q. Do you recall the specific date? A. March 10th.

[198]

Examination by Mr. Kritzalis (continued):

Q. Was it your testimony yesterday that during the course of your service as Chief Engineer aboard the Hellenic Sailor you never had a problem of any sort with the main bearings of the crankshaft? A. That's right.

[199]

Q. You referred earlier today and yesterday to a dye check which was performed by you in Port Sudan February, 1968? A. Yes?

[200]

Q. Could you tell me when the dye check process began and when it was terminated? Specifically, the dates.

[201]

Q. With reference to that diary, can you answer my question? A. Yes. From February 10th, 1968 until February 20th, 1968.

[11]

Examination by Mr. Kennedy:

Q. Do you know whether, as of November 6th, Mr. Allan had knowledge of the incident which the vessel purportedly experienced at New Orleans? A. I don't know.

Q. Do you know why Mr. Allan asked you to check the crankshaft alignments? A. Yes.

Q. Why was that? A. Because the ship's draft had a big difference aft, and as a result of this, by means of his letter, I should be able to take measurements, readings, when the vessel is in balance condition, that is, empty, and [12] when it is full with cargo.

Q. Now, when you referred to the Golten Marine or the Golten Marine measurements, were you referring to the measurements as recorded in Defendant's Exhibit 4 [PLAINTIFF'S EXHIBIT 23, IN EVIDENCE] for identification? A. Yes.

Q. Again, referring to the document, I note that the draft forward is twelve feet, six inches? A. Yes.

Q. Does this draft indicate that the forward compartments were empty? A. Yes.

Q. Again referring to the same document, I note that the aft draft is twenty-two feet, ten inches? A. Yes.

Q. Does this draft indicate that the vessel is fully loaded aft? A. With a limited amount of cargo—with a little cargo.

Q. Would then the draft figures that I just recited indicate that the ship is, generally speaking, in a baliast condition? A. Almost, yes.

Q. And, in your experience with the Sun Doxford [13] engine, when the ship is in ballast, does the crankshaft generally lie in the sagged condition? A. That's right, because at that moment, the engine room is the heaviest part of the vessel.

Q. And, again, if you are experienced with Sun Doxford engines, when the ship is in a fully loaded condition, does the shaft generally lie in the hogged condition? A. That's right, because then the engine room is the least heavy part of the vessel, the lightest part.

[14]

Q. Chief, I'm going to relate to you two conditions pertaining to two different crankshafts. They are both of the type used on the Hellenic Sun Doxford engine.

Now, in the first situation, the shaft during the operation has a sag of forty-two thousandths of an inch at the number three main journal; in the second situation, the shaft

has a hog of forty-two thousandths of an inch of the number 3 main journal. In your opinion, would both shafts during operation under such conditions generally be subjected to the same stresses? A. What is the ship's condition?

Q. Assuming both ships are in the ballast condition. A. In the situation where there is a sag, there would be a normal operation. In the situation where [15] there is a hog, there shouldn't be a normal good operation.

Q. Now, if the ship is in the loaded condition, what would your answer be? A. The crankshaft—my answer would be, the crankshaft that has the hog would be normal whereas the crankshaft that would have the sag would not be normal.

Q. And this is because a ship when loaded generally has a hog and when in ballast generally has a sag? A. Yes.

Mr. Kritzalis: We're assuming the engine room is on midship.

Mr. Kennedy: I referred to the Hellenic Sailor. Mr. Kritzalis: You are referred to a Sun Doxford engine which is a type. If you are referring to a

location—

By Mr. Kennedy:

Q. In answering my question, did you assume that the engine was in the center of the ship? A. We're speaking exactly about the Hellenic Sailor.

Q. Chief, when you first saw the web of the number two crank after the incident on December 24th—

Mr. Kritzalis: There are three webs, [16] I think, or more than three webs you mean?

Mr. Kennedy: The damaged web.

Q. Was the web at that time completely fractured? A. Yes.

[17]

- Q. You testified concerning a dye check that was made of the main engine crankshaft. A. Yes.
 - Q. At the request of the home office? A. Yes.
- Q. When did you receive this request? A. At the time the vessel was at Port Sudan.
- Q. You've said when the vessel was at Port Sudan. But she was at Port Sudan for some two months at least; am I correct? A. It was at Port Sudan for four-and-a-half months.
- [18] Q. Well, can you give me a better indication of when you received the request, that is, was it right after you advised home office of the crankshaft damage? A. No.
- Q. Your answer was no. I take it you were answering no to the second question that I posed? A. That was right after the breakage of the crankshaft, yes.
- Q. Do you recall whether you might have received the instructions to dye check the engine in January of '68? A. I did not receive these in January of '68.
- Q. Do you recall whether you received this request or learned of this request in February of 1968? A. I believe that I received it sometime between the second and third of February, 1968, but, if you want to, I can check it out.

Q. Chief, how would you check it out? Do you have any record with you that might give you this information? A. In a report that I sent to the New York office, I indicate when I began and when I finished the dye check and if in this room the cables are that were sent to me, I could then also find the cable that they sent me.

[19] Mr. Kennedy: Do you have the cable, Mr. Kritzalis?

Mr. Kritzalis: I have all the Hellenic outgoing and incoming cables covering the period approximately from August of '67 to August of '68.

Mr. Kennedy: You have a suggestion—would you refer to your report, I believe it is the report that's been marked as Plaintiff's Exhibit—

Mr. Kritzalis: Plaintiff's Exhibit A [NOT IN EVIDENCE] was a letter of February 24th, '68, and Exhibits B, C, D, E and F were enclosures.

Mr. Kennedy: I notice the Chief is examining that report of the enclosures.

Mr. Kritzalis: If it is relevant, we can pore through the cables.

Mr. Kennedy: I don't think we need the cable file at this time necessarily if the same information is contained in the Chief's report.

The Witness: I began the measurements, the checks—

Mr. Kritzalis: Dye checks, not [20] measurements. The Witness: I began the dye checks on February 10th, '68.

(B)

751a

Deposition of Marcos Evangelou

By Mr. Kennedy:

Q. You began the dye checks on February 10th, 1968?

A. That's when I began to do the dye checks.

Q. Do you recall when you completed them?

Mr. Kritzalis: I think the witness testified yesterday that he did.

The Witness: On February 20th—the same question was asked of me yesterday.

[25]

The Witness: I said that I began the dye check starting from February 10, 1968, and that I finished it on the 20th of February, 1968, but I finished the dye check which I carried out not only on the crankshaft, but also on the pins of the cross heads.

[44]

Q. Before we started marking the various exhibits, we were discussing dye checking of the main engine crankshaft.

For the record, how long did it take for the crew to complete the dye check operation, that is, of the crankshaft only? A. Based on the information I read in my diary, from February 10th, '68, until February 16, '68.

Q. And how many members of the crew participated in this dye check examination? A. Totally, including me, seven.

[45] Q. And was the work done on the round-the-clock basis, or was it done—was the work done on the round-the-

clock basis? A. No. We worked from six in the morning until eight at night, and we stopped with breaks for food and coffee.

[59]

- Q. Chief, was the metalock work completed? A. It was not completed because the Lloyds inspector condemned the crankshaft.
- Q. Do you know why the Lloyds inspector condemned the crankshaft? A. Yes.
- Q. And would you tell us why? A. In the course of the metalock repair work.

Mr. Kritzalis: I want to stop right there and we'll get a better description.

Mr. Case: We-I'd like to stop-

The Witness: An acetylene torch was employed in order to bend certain plates which would touch upon the broken web. While [60] this application was made of this plate on the web, the web was heated to such a point that it showed a break, a crack in the number three main journal. We bored a hole at that point with a drill.

You see, the depth of the crack, as long as the crack was proceeding downwards toward the center of the journal pin from its external surface, the elements given by Lloyds had been completed; I mean, the limits given to such cases involving crankshafts, and as a result he condemned the crankshaft.

By Mr. Kennedy:

Q. Were the cracks in the journal pin that you just described caused by the use of the acetylene torch? A. Yes.

Q. And was it while the workmen were using the acetylene torch that the cracks were discovered? A. Yes.

Q. And do you recall the date on which the cracks were discovered? A. It is possible I have written in the diary.

Mr. Case: Now, here, I don't know whether he means "diary" or log book.

[61] A. I don't member the date.

Q. Would you check the date in the records available to you?

Mr. Kritzalis: Let the record show that the witness is now looking at the file number 7, which would appear to preclude his use of the word, "log book".

Mr. Kennedy: I believe he's referring to Defendant's Exhibit 15-A; is that correct?

Mr. Kritzalis: Yes.

Mr. Kennedy: Ask him if that's what he's referring to.

The Witness: Yes.

In this diary, on the first of February, 1968, I report that the new crack was found, at which time the crank was condemned by the Lloyds inspector.

By Mr. Kennedy:

Q. In your opinion, could the welding have been done without causing the journal pin to crack? A. Yes.

Q. Would you describe briefly what was being done, that is, I'm referring now to the welding? And then describe, also, what could have been done, again [62] referring to the welding, which could have avoided the cracking of the journal pins? A. The continuous use of an acetylene torch has as a result the continuous increase of the temperature of the metal that we're heating.

If, for example, we had made use of the acetylene torch for five minutes, we stopped for twenty minutes, as we used it again for another five minutes and we stopped again for another twenty minutes, and in this manner we placed the

plates in place.

Mr. Kritzalis: The translation is getting blotched up; and he said, "and in this manner had been placed the plates."

Mr. Case: As I say, I have not recorded the witness as he is speaking in Greek in order for me to

claim he said the words there.

Mr. Kritzalis: I'm not asking you to claim anything and I'm not being contemptuous. I can hear what he's saying.

Mr. Kennedy: Will the witness continue?

The Witness: We stated that if for five minutes we were heating it and for twenty minutes we were not, the temperature [63] of the metal of the crankshaft would not rise and the crack would not have resulted in the main journal, whereas the people that were working on the metalock had the flame of the acetylene torch constantly on the metal.

By Mr. Kernedy:

Q. Did you at any time complain concerning the manner in which the metalock repairs were being effected? A. No, because it is not within my competence. That is to say, I don't know metalock work.

Q. Was Mr. Allan aware of the manner in which the repairs were being done? A. Mr. Allan was present in the course of the metalock repairs; whether he knows the specialty of metalock work. I don't know

Q. Chief, if the metalock repairs had been completed successfully, could the vessel have completed its voyage 35?

A. I have the opinion that first, since the Moyds surveyor accepted the metalock repair work until the unloading of the vessel, it would have held.

Q. It would have held; that is, the metalock repair would have held until the completion of the voyage? [64] A. Not the completion of the voyage. Until the vessel had unloaded.

Q. You mean unloaded the cargo then on board? That is the cargo destined for Jedda, Port Sudan, and Indian ports?

Mr. Kritzalis: I object to the form of the question.

Mr. Kennedy: What is the objection? Mr. Kritzalis: Off the record, please.

Mr. Kennedy: Off the record.

(Discussion off the record.)

Mr. Kennedy: On the record.

The Witness: Yes.

By Mr. Kennedy:

Q. Chief, have I left out any cargo? A. "Have I left out any cargo," you said?

Q. I'm trying to satisfy Mr.-

Mr. Kritzalis: Wait. The witness is now asking— Mr. Case: He said to me, "Do you mean, if any part of the cargo was taken out, was unleaded?"

Mr. Kennedy: Strike that question and the answer from the record; I mean, [65] literally, get it out.

Mr. Kritzalis: I'd like it to stay in. This is a record of examination conducted here, today, that is De Bene Esse, and I think it should stay in the record.

Mr. Kennedy: Go ahead.

[691

Q. You testified also concerning a draft differential between forward and aft and its effect on alignment readings, being cranks aft alignment readings, on a ship such as the Hellenic Sailor? A. Yes.

Q. And you said, also, that there should not be a difference in not more than two or three feet between the forward and the aft draft? A. Yes, we are approaching the ideal and real alignment when the vessel does not have a draft difference between forward and aft exceeding two or three feet.

Q. Could you obtain what I would characterize [70] as a meaningful alignment if the vessel is in a draft condition which shows, oh, a departure of ten feet between forward

and aft draft? A. Don't have that much experience on this point. I have carried out alignments in a Doxford engine from the beginning.

Q. You mentioned that you would get an ideal or I believe you said a real alignment if a ship is on an even keel?

A. Yes.

Q. By "real" or "ideal", do you mean to say more accurate indication of alignment? A. Yes.

[92]

.

Examination by Mr. Kritzalis:

Q. You testified that the repairs I—withdraw the word "repairs"—and would say that the replacement of the number two crank took place in Bombay in the summer of 1968; is that right? A. Yes.

Q. Could that have taken place at Port Sudan in the period from December of 1967 to August of 1968? A. No. Because there was no competent plant to accomplish work at Port Sudan.

Q. By plant facilities, do you mean drydocking facilities or other facilities? A. I mean that a plant that could have the necessary equipment for the placement of a shaft and the subsequent operation of the engine with the proper equipment was not to be had at Port Sudan.

[93] And the placement of the instalation of the crankshaft in the main engine requires no drydocking of the vessel.

And I conclude that there was no equipment that is required for the instalation of the crankshaft, of the new crankshaft.

	•	•		•	•	
[102]	•	•	•	•	•	
				/8/		EVANGELOU
					Markos	Evangelou
REPUBLIC OF GREECE)			
PROVINCE OF ATTICA)			
CITY OF ATHENS)	88.:		
EMBASSY OF TH	E)			
UNITED STATES	OF AME	RICA)			

Subscribed and sworn to before me this 23rd day of October, 1973.

/s/ CHARLES S. KENNEDY, JR.
Charles S. Kennedy, Jr.
Consul General
of the United States of America

Stipulation of Discontinuance

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF NEW YORK

71 Civ 2865

[Caption Omitted]

It is hereby stipulated and agreed upon by and between the attorneys for the respective parties herein that the above entitled action be discontinued as to counter-claims asserted by the defendant American Motorists Insurance Company and defendant Great American Insurance Company with prejudice and without costs to either party against the other.

Dated: New York, New York March , 1974

Donovan, Donovan, Maloof & Walsh

By: Donald M. Kennedy
A Member of the Firm
Attorneys for Defendants

BURLINGHAM UNDERWOOD & LORD

By: John S. Rogers

Attorneys for Plaintiff

cc:

HILL, RIVKINS, McGowan & Carey
Attorneys for Defendants
95 Fulton Street
New York, New York 10038
BE 3-6171

Judgment

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF NEW YORK
71 Civ 2865

HELLENIC LINES LIMITED,

Plaintiff,

-against-

AETNA CASUALTY & SURETY COMPANY, ATLANTIC MUTUAL INSURANCE COMPANY, AMERICAN MOTORISTS INSURANCE COMPANY, FEDERAL INSURANCE COMPANY, SEA INSURANCE COMPANY LTD., PENNSYLVANIA INSURANCE COMPANY, FIREMAN'S FUND INSURANCE COMPANY, GREAT AMERICAN INSURANCE COMPANY, HARTFORD INSURANCE GROUP, HAN-OVER INSURANCE COMPANY, NEW HAMPSHIRE INSURANCE COMPANY. HOME INSURANCE COMPANY, INSURANCE COM-PANY OF NORTH AMERICA, MARINE OFFICE-APPLETON & COX CORP., NORTHWESTERN NATIONAL INSURANCE COM-PANY, ROYAL INSURANCE COMPANY, LIMITED, SAFEGUARD INSURANCE COMPANY, STANDARD MARINE INSURANCE COM-PANY, LTED., SUN INSURANCE COMPANY, CAMDEN FIRE INSURANCE ASSOCIATION, St. PAUL FIRE & MARINE INSUR-ANCE COMPANY, INDEMNITY MARINE ASSURANCE COMPANY, LTD., EMPLOYERS LIABILITY ASSURANCE COMPANY, LTD., AMERICAN EMPLOYERS INSURANCE COMPANY, UNITED STATES FIRE INSURANCE COMPANY and UNION INSURANCE SCCIETY OF CANTON, LTD.,

Defendants.

761a

Judgment

This action having come on for trial before this Court, Honorable Thomas P. Griesa, United States District Judge, presiding, and the issues having been duly tried and the Court thereafter rendered its opinion on February 7th, 1974, it is hereby

ORDERED, ADJUDGED AND DECREED, that complaint of the plaintiff herein be dismissed on the merits and that the defendants recover their costs from the plaintiff herein.

Dated: New York, New York March 27, 1974

THOMAS P. GRIESA
U.S.D.J.

JUDGMENT ENTERED 4-1-74
RAYMOND F. BURGHARDT
Clerk

Notice of Appeal

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF NEW YORK 71 Civ. 2865

[Caption Omitted]

Notice is hereby given that Hellenic Lines Limited plaintiff above named, hereby appeals to the United States Court of Appeals for the Second Circuit from the final judgment of the Honorable Thomas P. Griesa, entered in this action on the 1st day of April, 1974, ordering that the complaint of Hellenic Lines Limited, plaintiff, be dismissed on the merits with costs.

Dated: New York, New York April 29, 1974

Attorneys for Appellant,

Burlingham Underwood & Lord

25 Broadway

New York, New York 10004

By John S. Rogers

A Member of the Firm

Notice of Appeal

To:

THE CLERK OF THE COURT
United States District Court
Southern District of New York
United States Court House
Foley Square
New York, New York 10007

Donovan, Donovan, Maloof & Walsh Attorneys for Defendants 161 William Street New York, New York 10038

HILL, RIVKINS, McGowan & Carey
Attorneys for Defendants
96 Fulton Street
New York, New York 10038

Judgment

UNITED STATES DISTRICT COURT

Southern District of New York
71 Civ 3221

HELLENIC LINES LIMITED,

Plaintiff.

-against-

LIFE INSURANCE CORPORATION OF INDIA,

Defendant.

This action having come on for trial before this Court, Honorable Thomas P. Griesa, United States District Judge, presiding, and the issues having been duly tried and the Court thereafter rendered its opinion on February 7th, 1974, it is hereby

ORDERED, ADJUDGED AND DECREED, that the complaint of the plaintiff herein be and the same hereby dismissed on the merits and that the defendant recover its costs from the plaintiff herein.

Dated: New York, New York April 2, 1974

THOMAS P. GRIESA
U.S.D.J.

JUDGMENT ENTERED 4-2-74
RAYMOND F. BURGHARDT
Clerk

Notice of Appeal

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF NEW YORK 71 Civ. 3221

[Caption Omitted]

Notice is hereby given that Hellenic Lines Limited plaintiff above named, hereby appeals to the United States Court of Appeals for the Second Circuit from the final judgment of the Honorable Thomas P. Griesa, entered in this action on the 2nd day of April, 1974, ordering that the complaint of Hellenic Lines Limited, plaintiff, be dismissed on the merits with costs.

Dated: New York, New York April 29, 1974

Attorneys for Appellant,
Burlingham Underwood & Lord
25 Broadway
New York, New York 10004
By John S. Rogers
A Member of the Firm

Notice of Appeal

To:

THE CLERK OF THE COURT
United States District Court
Southern District of New York
United States Court House
Foley Square
New York, New York 10007

Donovan, Donovan, Maloof & Walsh Attorneys for Defendant 161 William Street New York, New York 10038

HILL, RIVKINS, McGowan & CAREY
Attorneys for Defendant
96 Fulton Street
New York, New York 10038

2 Copy James 27, 1975, Met appeller, te.